NIAGARA RIVERVIEW PARK AND TRAIL

PREPARED FOR:

The City of Niagara Falls
New York

PROJECT SPONSOR:

NYS Department of State
Division of Coastal Resources
and Waterfront Revitalization

PREPARED BY:

The Saratoga Associates
Landscape Architects, Architects,
and Planners
Saratoga Springs, Buffalo,
New York

APRIL 1988

TABLE OF CONTENTS

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LIST OF DRAWINGS

INTRODUCTION

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The NYS Department of State and the City of Niagara Falls retained The Saratoga Associates, Landscape Architects, Architects and Planners, to prepare the conceptual design for the upper Niagara River bicycle and hiking trail. The proposed trail is a key component in the City of Niagara Falls Waterfront Revitalization program, providing unique recreational opportunities for residents and tourists in the region. In addition, because of the immediate adjacency of the Robert Moses Parkway, the trail facility and ancilary development provides the opportunity to enhance the southern "gateway" to the community.

The setting for the proposed trail is the Robert Moses Parkway corridor, defined by the Niagara River embankment and the Robert Moses Parkway. The trail begins at the North Grand Island Bridge and extends north approximately four miles to the Niagara Reservation State Park.

The focus of the study was structured to include both recreational and tourism objectives. These included:

- o Provide and enhance the opportunity for public access to the Niagara River shoreline to increase tourist stay on the American side of the Falls;
- o Link existing city residential areas to the Niagara Riverfront to enhance recreational opportunities;

- Develop activity nodes along the trail corridor to increase retention along the waterfront;
- Visually enhance the river corridor as a southern gateway to the city.

In order to ensure these objectives were fully realized, a process was undertaken which considered both program and environmental considerations. Fundamentally, the environmental setting was evaluated to determine the opportunities and constraints to support the proposed program.

Initially, scale maps of the project area were compiled to provide a base for study purposes. Next, a visual site analysis was undertaken to evaluate the assets and liabilities of the project corridor. Utilizing the field observations, develpoment opportunities and constraints were identified. Finally, the master concept plan was prepared, based on the program objectives and the development opportunities. The product provides a strong conceptual model for guiding subsequent project development.

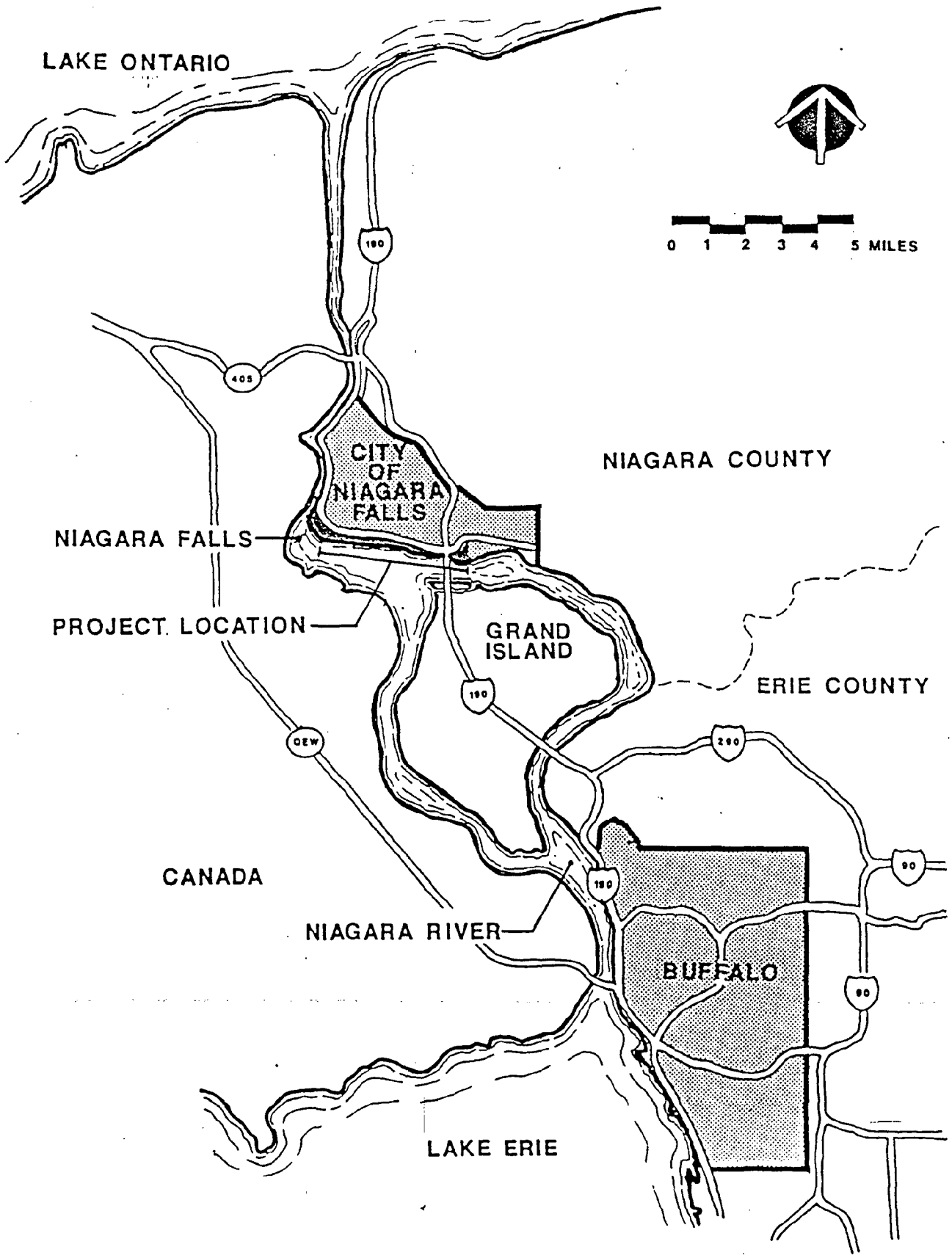
THE SITE
opportunities/constraints

THE SITE - OPPORTUNITIES/CONSTRAINTS

The proposed Pedestrian/Bicycle Trail is 3.9 miles in length and is located within the Niagara River corridor (see Drawing 00). It begins at the North Grand Island Bridge adjacent to the proposed Century Club restaurant and extends west along the north embankment of the Niagara River to the southern boundary of the Niagara Reservation. The existing Niagara Reservation trail continues on along the embankment river to the Niagara Falls Visitor Center, thereby providing a continuous trail of approximately 4.5 miles in length.

Generally, the study area's north boundary line is contiguous with the Robert Moses Parkway and is bordered on the south by the Niagara River. The proposed trail also diverges at the boundary to the Niagara Reservation and connects with the City of Niagara Falls walk system.

The project area is owned by the Power Authority of the State of New York (PASNY).



REGIONAL LOCATION MAP

DRAWING 00

CLIMATE

Climatic conditions within the project corridor are representational of western New York's temperate latitude, which experiences hot summers and cold winters. Temperatures in this immediate area, however, are moderated by the slower heating and cooling rates of Lake Erie to the south, Niagara River and Lake Ontario to the north. This results in cooler springs and warmer autumns than would be expected for inland areas. Extremes in summer and winter temperatures are also moderated by the lakes. These temperatures may inhibit use of the trail in the early spring, but extend use later into the fall. Greater cloud cover can be expected in the winter, while the summer months remain abundantly clear. Occasional sun screens such as deciduous tree groupings should be provided along the trail to enhance user comfort during the summer months.

"Lake effect" snow squalls provide locally heavy snowfalls. However, the City of Niagara Falls generally receives less snowfall than its neighbors to the south. The snow accumulation that does occur provides an opportunity to extend year-round utilization of the trail for events such as cross country skiing, sledding and tobogganing.

The prevailing winds are from the southwest during the spring and summer, and shift to a more westerly to northwesterly direction during the autumn and winter. Wind speeds average approximately 12 mph, thereby providing the opportunity for kite flying.

TOPOGRAPHY AND SOILS

Topographic slopes throughout the site were classified into the following categories: 0-8%, 8%-15%, and 15%+. A visual analysis of the site was undertaken to evaluate approximate slope conditions. Typically, the slope cross section begins at the edge of Robert Moses Parkway and slopes down to the river's embankment. All categories of percent slope were found to exist in the study area, with a majority of the slopes falling into the 0%-8% and 8%-15% range. Generally, the slopes above the river's riprap embankment are in the 0%-3% range. This topographic "shelf" provides an ideal setting for constructing the bicycle and hiking trail. The site's topographic high point occurs at the PASNY spoils pile adjacent to the Adams Intake Canal. The land form was created by depositing excess cut material from previous hydro power projects. This topographic feature extends approximately thirty feet above the surrounding land forms and commands a 360° view. It is a prominent land form and should be preserved and enhanced as a feature in the trail system.

All of the soils on the site may be classified as either fill material or impervious pavement. The fill was placed prior to 1960, with the development of the various hydroelectric power projects. Much of the fill material consists of blasted rock. The previous shoreline extended to limits beneath the Robert Moses Parkway.

It is recommended that during construction the existing topsoil be stripped on the trail and stockpiled for reuse. Analysis of soil conditions will be required to determine the subgrade characteristics for structure design.

LANDFORMS AND DRAINAGE FEATURES

The Niagara Frontier of Western New York is named after the Niagara River. This area is characterized by flat land with three "stairs," rising in elevation from Lake Ontario to the Allegheny Plateau. The first step is the Lake Ontario plain (once glacial Lake Iroquois) located to the north of Niagara Falls. A 250 foot scarp known as the Niagara Scarp marks the beginning of the second step. This area is called the Tonowanda plain, once inundated by Lake Tonawanda, which extends south of the Onondaga Scarp, the begining of the third step (Van Diver 1985).

The Niagara River flows across the Tonawanda plain. This area is composed of Silurian strata capped by late Silurian Lockport group dolostine (i.e., Lockport dolomite). The cataracts are formed by the differential erosion rates of the strata. The Lockport dolomite is resistant to erosion processes whereas the underlying soft strata is easily erodible.

The Niagara River and Gill Creek are the only two water bodies associated with the trail project. Gill Creek drains into the Niagara River approximately one-half mile west of the NYS Power Authority intakes. Reportedly, the NYSDEC has found the levels of PCB's contained in Gill Creek to be as high as 100,000 parts per million. This number was found to exist in samples taken from the mouth of Gill Creek as it enters the Niagara River, an area located within the project site. Signs

are currently posted warning against swimming, wading and eating fish caught in the creek. Clean-up is not expected to begin until 1992.

The Niagara River may be more properly defined as a strait. "It is only 33 miles long, and it carries as much water at its head as at its mouth. It has no major tributaries and no mountain origin" (Van Diver 1985). The first 26 miles of the river, beginning at Lake Erie, is referred to as the upper river and the last seven miles as the lower river. It drops 326 feet from Lake Erie to Lake Ontario and carries almost the entire outflow of the upper Great Lakes (Erie, Huron, Michigan and Superior). The settling effects of the lakes results in almost no sediment load in the river. Some seasonal flooding occurs in low-lying areas along the upper river. This is true directly under the Grand Island bridges, along the project route.

The river provides two strong visual forms for the project. Its presence should be recognized and reinforced through placement of promenades and viewing areas.

LAND USE

The majority of the project site is currently designated as a transportation corridor defined by the presence of the Robert Moses Parkway and adjoining lawn or open "green space." The project area is under ownership by the Power Authority of the State of New York (PASNY). It is the green space within the corridor which provides the basis for the proposed bicycle and hiking trail. In addition, the parkway provides convenient automobile access to the facility.

Immediately adjacent to the project site area is industrial land use, including Occidental Chemical Corp., E.I. duPont deNemours & Co., Olin Corp., Carborundum Co., Niagara Mohawk and International Paper. These uses have an impact on the project in terms of air quality, visual context and physical access to the trail. Various mitigating measures to minimize these effects must be provided. Fortunately, the Robert Moses Parkway, which parallels the trail, forms a strong physical and partial visual barrier to the industrial uses.

Industrial use within the project site is limited to two sets of industrial water intakes which are owned by PASNY. The water intake gate structures provide a strong and positive visual feature along the route, and should be integrated into the trail system.

The proposed trail route encounters two potential physical barriers. These include Gill Creek and Adams Hydraulic Intake Canal. Alternative mitigation measures must be considered.

The easterly terminus of the project site is at the North Grand Island Bridge. Immediately adjacent to this area is the City of Niagara Falls LaSalle residential area. It is anticipated that a major user group will originate from this area. In a similar manner, the same concept holds true for the westerly terminus of the project site, a point of which trail connects with the Niagara Reservation and the major commercial/residential area of Niagara Falls. It is anticipated that a tourist-oriented user group will be generated from this area. Connection to the Niagara Reservation trail system should be coordinated with the park owner/operator, NYS Office of Parks and Recreation.

Recreational Uses Along the Niagara River

This description pertains primarily to the section of river adjacent to the proposed trail. A majority of the riverbank is currently used for fishing, although access is a major constraint. Several points of heavy toxic contamination are avoided by fisherman. Trophy size trout can be taken from the shore of the project area adjacent to Prospect Park. Boaters utilize portions of the river down to the PASNY water intakes. Some hazards do exist with the strong current, from which disabled boats can be swept downriver to the falls. Public boat launches within the site are nonexistant. Swimming is not allowed within the project boundaries.

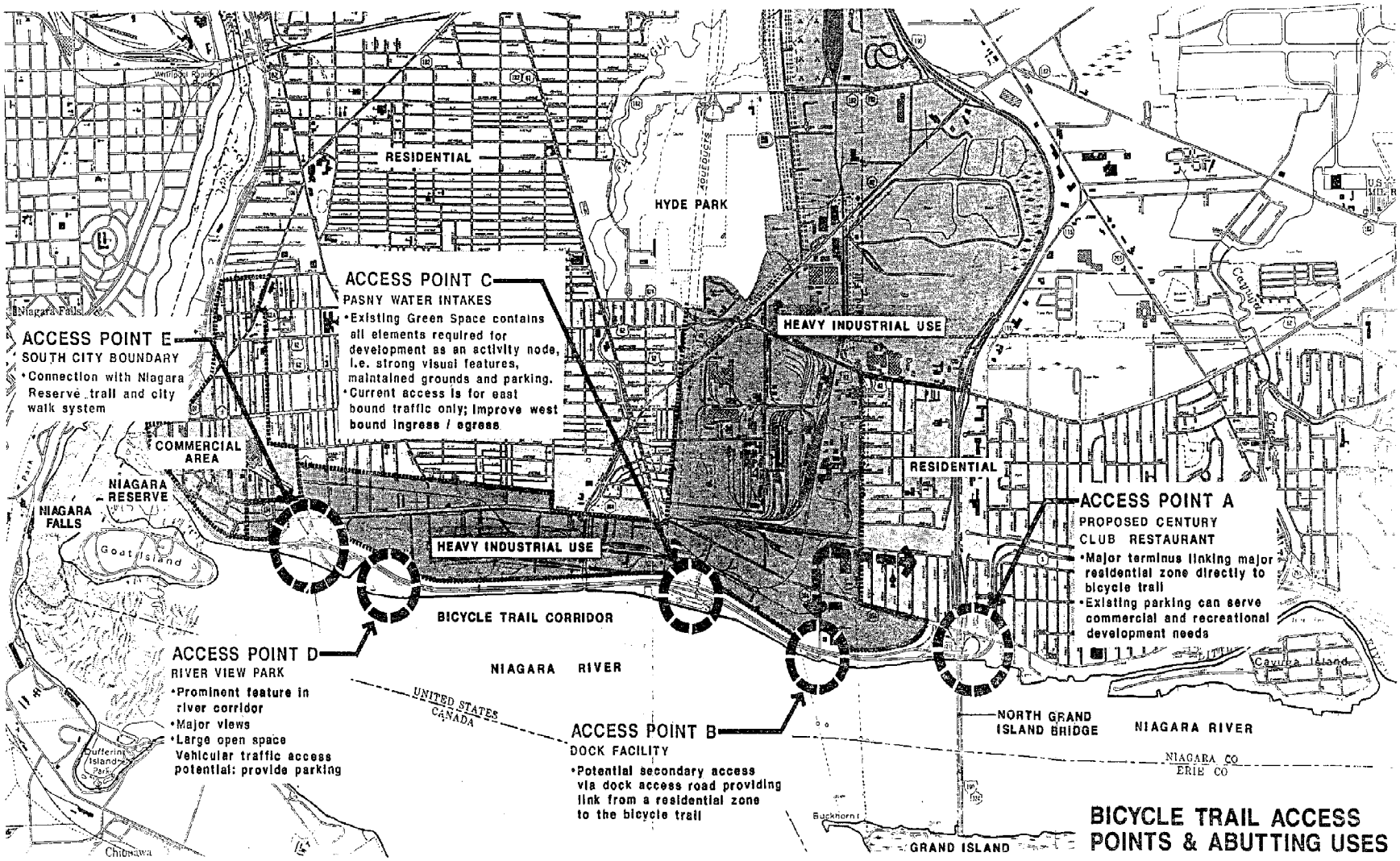
DESIGN CONCEPT

DESIGN CONCEPT

The pedestrian/bicycle trail, as illustrated on the following site diagrams, utilizes the existing environmental setting to provide a diverse recreational experience. The proposed trail will be classified as a Class III bicycle trail, since it will include use by both pedestrians and bicyclists.

The trail's primary intention is to provide access to the water's edge, an underutilized public resource. The Conceptual Bicycle Trail Access Points and Abutting Uses Plan, Drawing 01, depicts the overall design concept. As illustrated, the Robert Moses Parkway, which visually and physically serves as the "Chinese Wall" effectively separates the city from the river. The drawing identifies multiple site access/egress points to overcome this limitation. A total of five points are provided and spaced at key locations along the 3.9 mile trail based on existing site features and development opportunities. In addition to providing access, these areas serve as activity nodes, giving the user the opportunity to participate in additional passive and/or active recreation interests. These five points are as follows (see Drawing 01):

A. Access Point A - The Century House restaurant near 66th Street
B. Access Point B - Existing dock facility
C. Access Point C - PASNY water intake area
D. Access Point D - PASNY Spoils area
E. Access Point E - Trail connection with the Niagara Reserve.


RESIDENTIAL
HYDE PARK
ACCESS POINT C
PASNY WATER INTAKES
•Existing Green Space contains all elements required for development as an activity node, i.e. strong visual features, maintained grounds and parking.
•Current access is for east bound traffic only; improve west bound ingress / egress
HEAVY INDUSTRIAL USE
ACCESS POINT E
SOUTH CITY BOUNDARY
•Connection with Niagara Reserve trail and city walk system
COMMERCIAL AREA
NIAGARA RESERVE
NIAGARA FALLS
RESIDENTIAL
ACCESS POINT A
PROPOSED CENTURY CLUB RESTAURANT
•Major terminus linking major residential zone directly to bicycle trail
•Existing parking can serve commercial and recreational development needs
HEAVY INDUSTRIAL USE
BICYCLE TRAIL CORRIDOR
ACCESS POINT D
RIVER VIEW PARK
•Prominent feature in river corridor
•Major views
•Large open space
Vehicular traffic access potential: provide parking
NIAGARA RIVER
UNITED STATES
CANADA
ACCESS POINT B
DOCK FACILITY
•Potential secondary access via dock access road providing link from a residential zone to the bicycle trail
NORTH GRAND ISLAND BRIDGE
NIAGARA RIVER
NIAGARA CO
ERIE CO
GRAND ISLAND
BICYCLE TRAIL ACCESS POINTS & ABUTTING USES

DRAWING 01

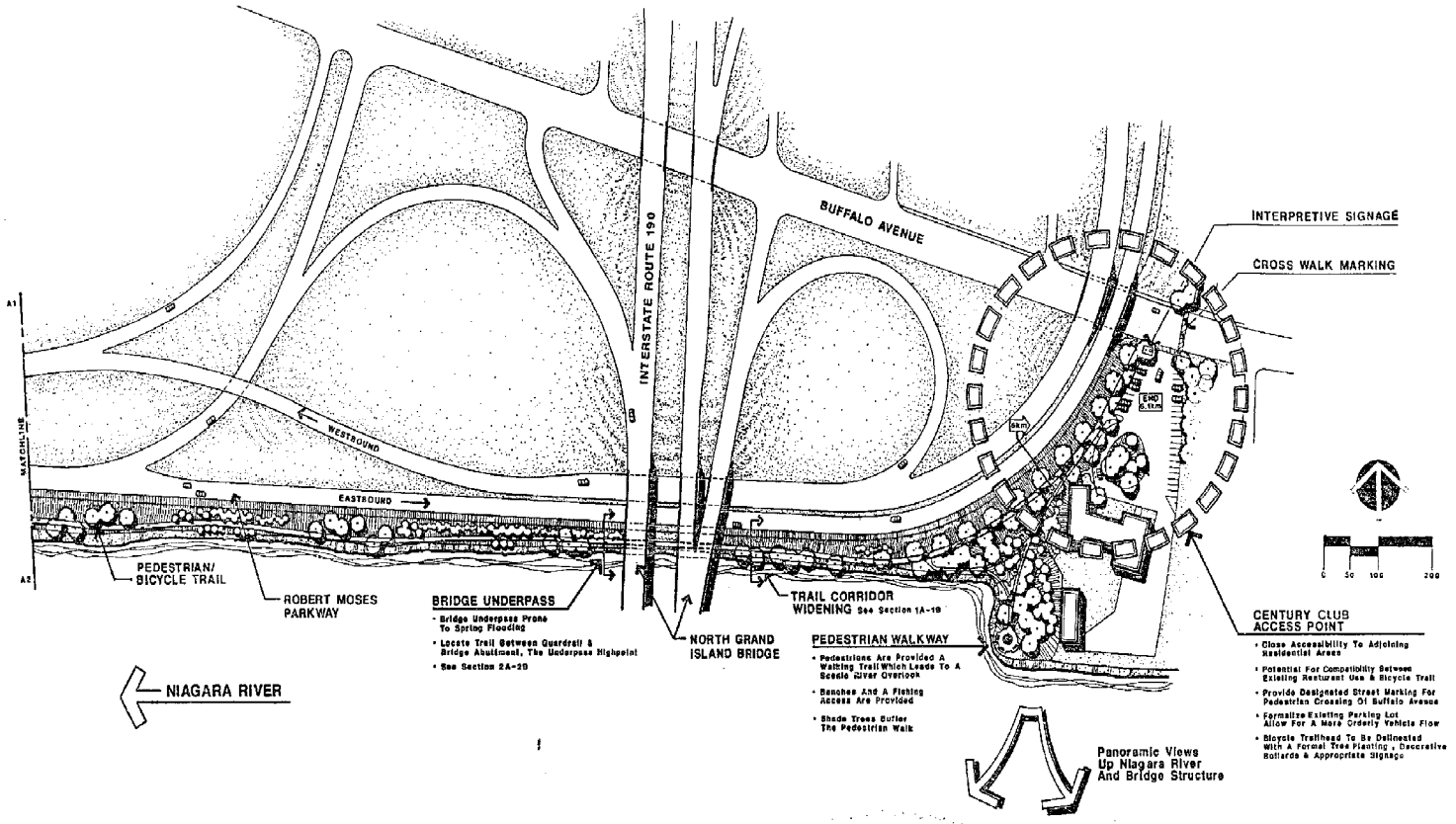
The following discussion briefly describes the trail concept. The narrative is structured to sequentially describe each segment as it relates to an activity node.

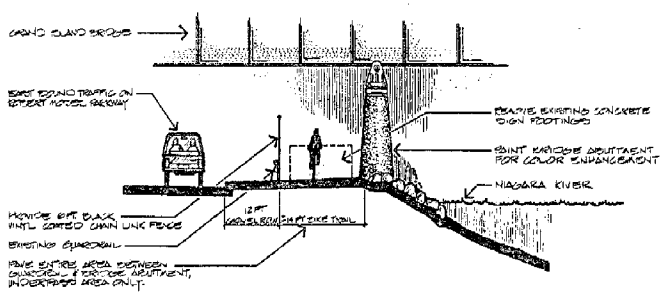
Century House Access Point - (Drawing No. 1)

The proposed trail begins at the area adjacent to the proposed Century House restaurant near 66th Street (Drawing No. 1 - Century House Access Point). This terminus point is situated adjacent to the residential area of LaSalle, a potential large user group. This mandates the installation of adequate crosswalks on Buffalo Avenue. The trail head is adjacent to the parking lot of the restaurant, thereby providing the potential for parking and refreshment/restroom facilities for the trail user. This area would receive a formal tree planting to announce the trail terminus, along with the placement of benches, bollards, and interpretative signage.

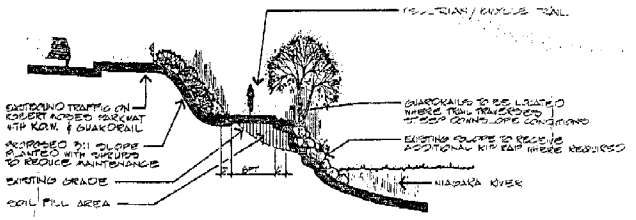
Parking in the adjacent lot would accommodate ±40 vehicle. Redesign of the parking layout and coordination with the Century House restaurant is required.

From the access point, the asphalt trail immediately begins to diverge into two as it proceeds down to the top of the embankment for the Robert Moses Parkway. The main bicycle and hiking trail continues along the Parkway right-of-way. The secondary path becomes a stone dust trail for pedestrians only. This pedestrian walkway leads to the water's edge and will provide a seating area for fishing, picnicing and viewing out across the water.





BRIDGE UNDERPASS SECTION 2A-2B



TRAIL CORRIDOR WIDENING SECTION 1A-1B

Prepared For:
The City of Niagara Falls, New York

Project Sponsor:
NYS Department of State Division of Coastal Resources and Waterfront Revitalization

THE SARATOGA ASSOCIATES

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LANDSCAPE ARCHITECTS, ARCHITECTS AND PLANNERS

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NIAGARA FALLS RIVER VIEW PARK & BICYCLE TRAIL

CENTURY HOUSE ACCESS POINT

TSA PROJECT NO. 88.013

DRAWN BY TSA CHECKED BY TSA

SCALE

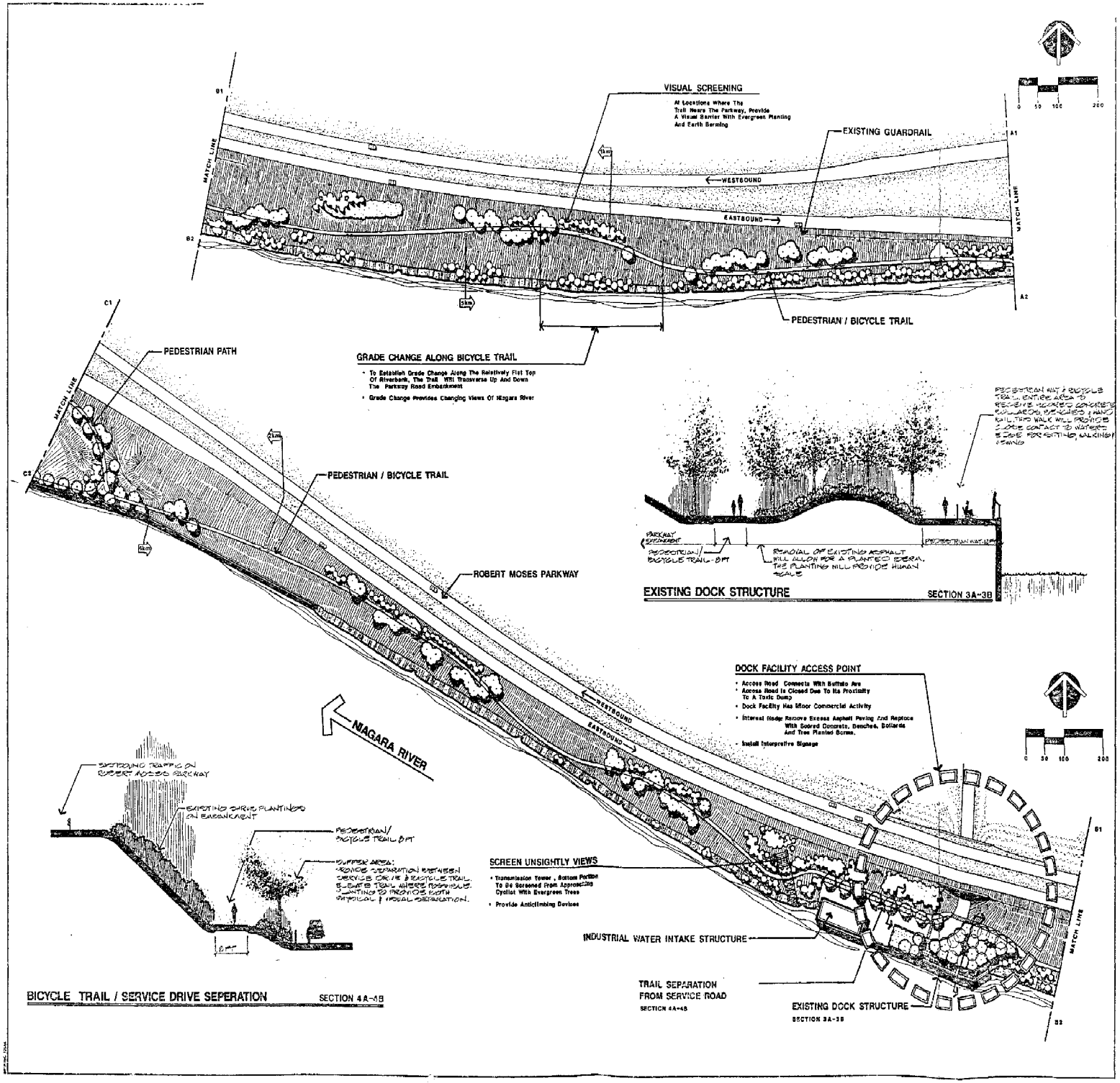
DATE 4-27-88

REV

DWG NO 1

As the bicycle and hiking trail approaches the North Grand Island Bridge, it encounters its first physical obstacle. The trail corridor becomes excessively narrow through this area and will necessitate the placement of riprap to widen the trail base. As the trail passes under the North Grand Island Bridge, it is located between the bridge abutment and the parkway guardrail. There currently exist two large concrete sign footings; these must be removed in order for the trail to proceed. The underpass zone is to have a visual screen installed along the existing guardrail to separate views of on-coming traffic in this bottle-neck area. Painting the concrete bridge abutment a bright color will brighten this area, which receives little natural sunlight. (See Drawing No. 1, detail 2A-2B).

The trail proceeds along for the next two miles unimpeded, as the corridor widens to an excess of 100 feet. It is in these areas that the existing cross slope will be utilized to provide vertical grade change along the route. Where the trail approaches the road, planted vegetative screens will be used to visually and physically separate the uses (see Drawing #1, plan view).



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NIAGARA FALLS RIVER VIEW PARK & BICYCLE TRAIL

EXISTING DOCK FACILITY

T&A PROJECT NO. 88.013

DRAWN BY T&A CHECKED BY T&A

SCALE

DATE 6/27/88

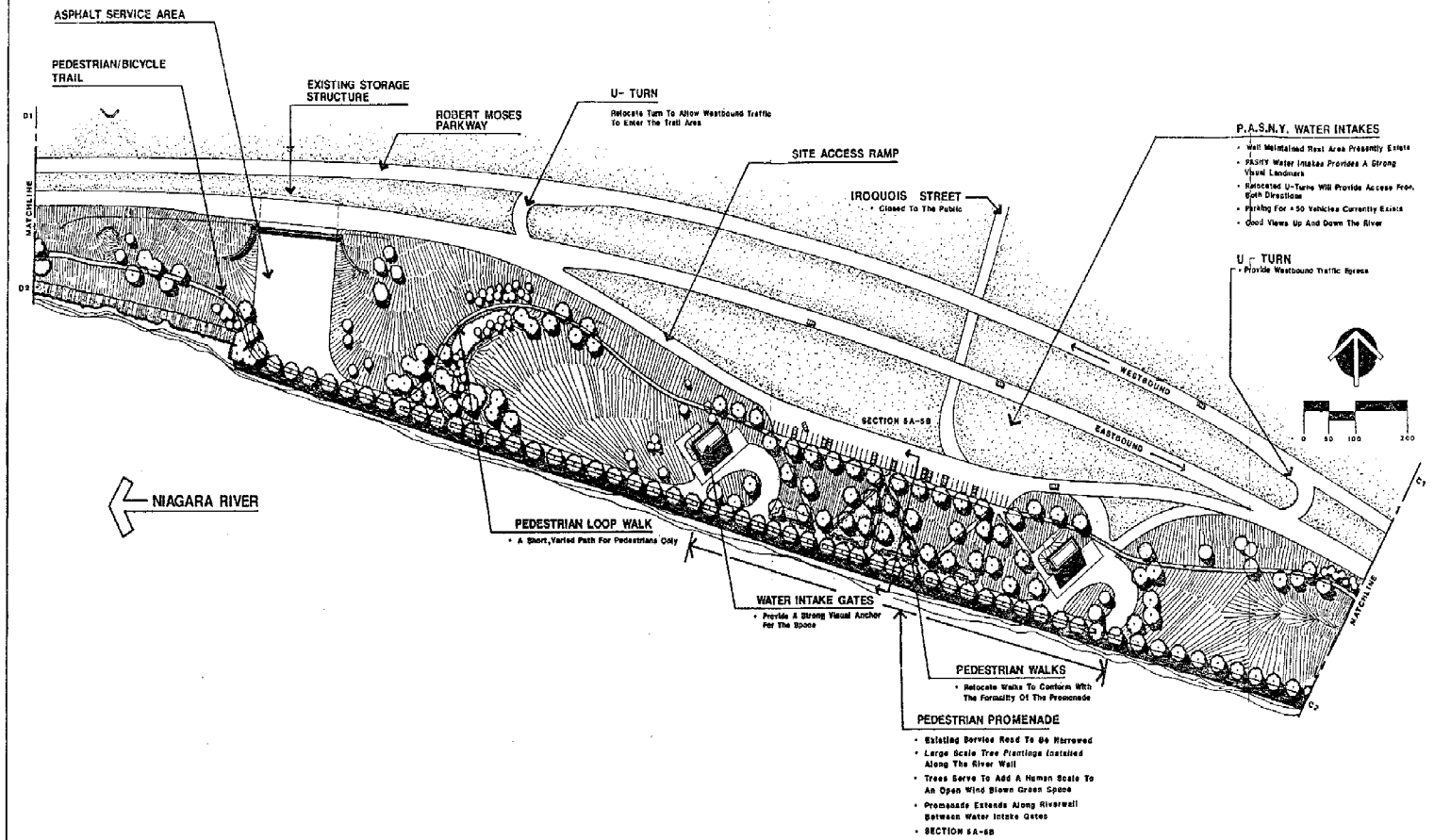
REV

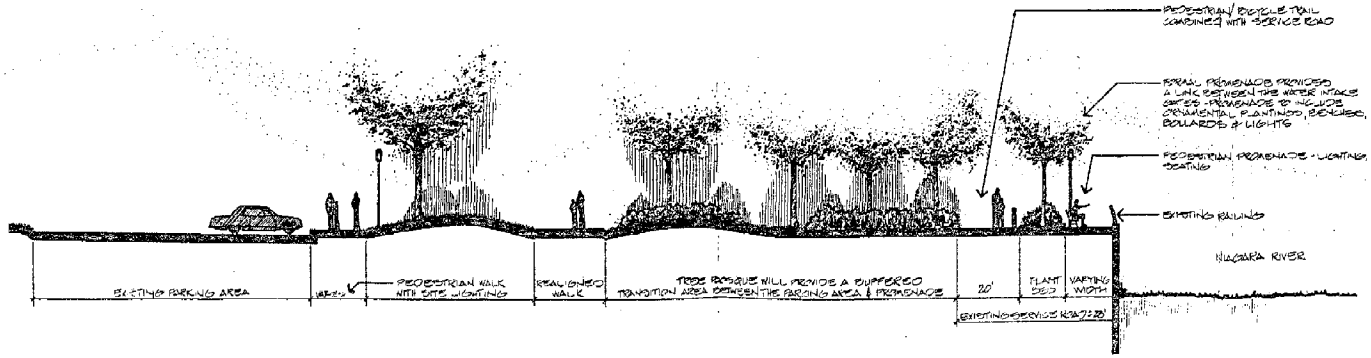
SHEET NO. 2

Existing Dock Facility - (Drawing No. 2)

Access point B is encountered as the trail approaches the existing dock facility. The vehicular access road to the facility is currently closed due to is proximity to a toxic storage lagoon, located on the north side of the Robert Moses Parkway. This dock area has infrequent commercial activity, but the industrial water intakes located here are still in use. Service vehicles access the area by mounting the curb of the Parkway and descending down to the dock. Reopening of the access road will allow for a somewhat indirect access to the trail by the neighborhoods located within a .25 distance of this point. The dock is to be developed as a passive activity node by removing unnecessary asphalt paving and replacing with two planted berms, scored concrete, benches and bollards (Drawing No. 2, Plan View and Section 3A-3B/4A-4B).

The Parkway embankment screens out all views of the abutting industrial facilities, which adds to the tranquility of the space. Once developed, the dock will provide a place for pedestrians and bicyclists to sit and rest while viewing the river.





PEDESTRIAN PROMENADE AT P.A.S.N.Y. WATER INTAKES SECTION 5A-5B

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P.A.S.N.Y. WATER INTAKES

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DATE 4.27.88
REV
DWG NO 3

PASNY Water Intake Area - (Drawing No. 3)

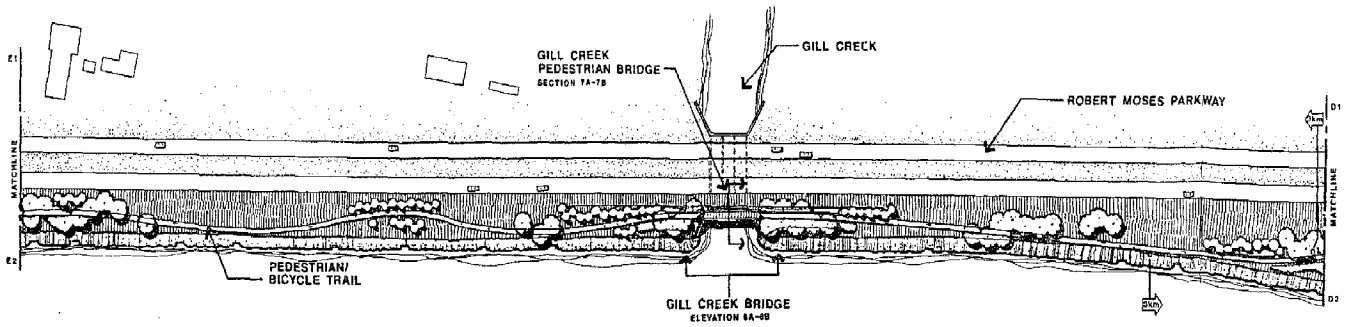
From the dock facility, the trail continues west along a slow gradual curve, where it enters access point C., the PASNY water intake area (Drawing No. 3 - PASNY Water Intakes). This landscape feature is visible from a distance by its prominent intake structures. Arrival by vehicle to this node is currently via the eastbound lane of the parkway. Modification of the parkway U-turns will make accessibility from both directions feasible. This access point is considered the approximate halfway point along the trail route. The Power Authority has provided a visitors' area that includes parking, walkways and an open lawn area. Development of this activity node will take the existing amenities a step further towards a more formal enriched concept. The existing service road, which runs along the river wall, is developed into a formal promenade by dividing it into three areas; a 5 ft. wide promenade next to the river wall will include benches and decorative lighting. This is backed with a shade tree planted esplanade. Adjacent to this is the bicycle trail and infrequently used service road. This formal promenade extends the length of the river wall is visually anchored by the symmetry of the water intake gates. (Drawing No. 3, section 5A-5B).

For the visitor arriving by car, the experience is equally rewarding. The pedestrian now afoot can choose to either go directly to the promenade or access the trail from a more leisurely pedestrian path that encircles the water intake gates.

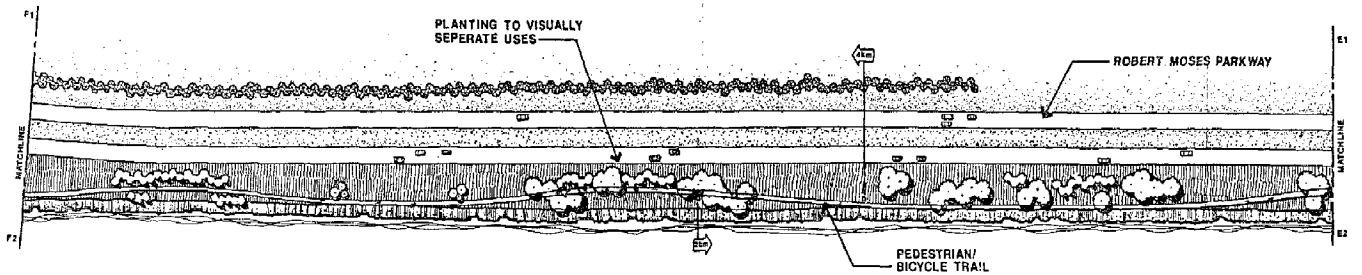
Once the promenade has been reached, the visitor is rewarded with scenic vistas of the Niagara River (Drawing No. 3, Plan View).

Just west of the PASNY water intakes, the trail encounters a physical obstacle in the corridor. It is the Gill Creek outfall, a ±100 foot wide concrete headwall structure (Drawing No. 4 - Gill Creek Crossing). Two options exist in spanning this length. Option A routes the trail up into the parkway right-of-way, a ±20 foot wide area. This route requires coordination with NYSDOT. Certain safety issues need to be addressed regarding a physical separation between the eastbound lane of the Parkway, which has a posted speed limit of 55 mph, and the pedestrian/bicycle trail. A concrete road barrier anchored to the ground offers a possible mitigating safety measure.

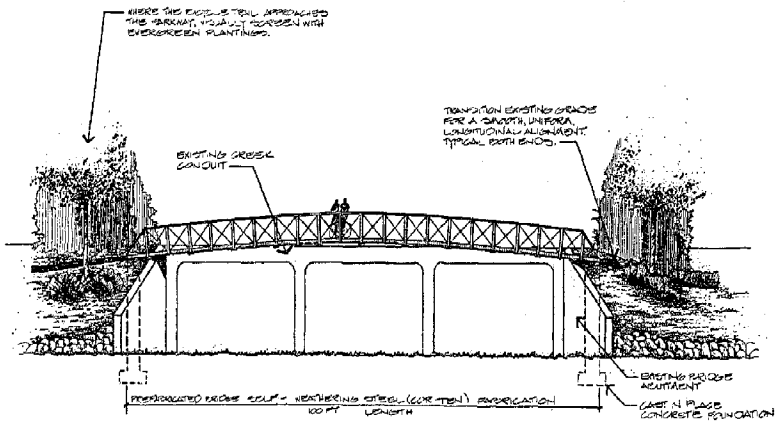
The other, more aesthetically pleasing, approach is Option B, which calls for the installation of a pedestrian bridge spanning the headwall structure. This bridge, which ensures safe separation of users, ten feet in width and approximately 100 feet in length. The bridge is constructed from COR-TEN steel, when allowed to weather develops a brown earth-tone finish, fitting well into the park image. The installation of a bridge adds an exciting element and distinguishable landmark to the trail. Access to the water at this point is not encouraged due to the toxicity level of Gill Creek.



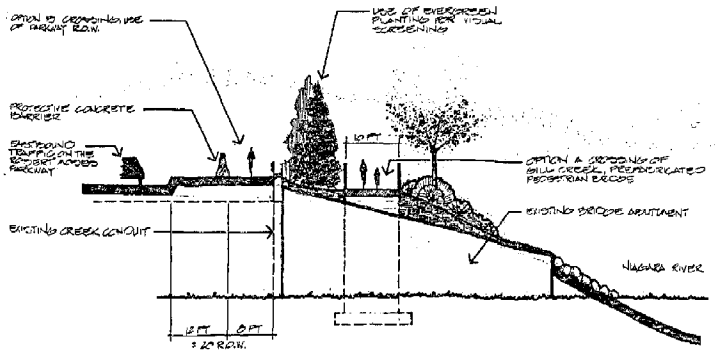
NIAGARA RIVER



NIAGARA RIVER



GILL CREEK PEDESTRIAN BRIDGE ELEVATION 6A-6B



GILL CREEK CROSSING - OPTION A & B, SECTION 7A-7B

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GILL CREEK CROSSING

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SHEET NO. 4

River View Park - (Drawing No.5)

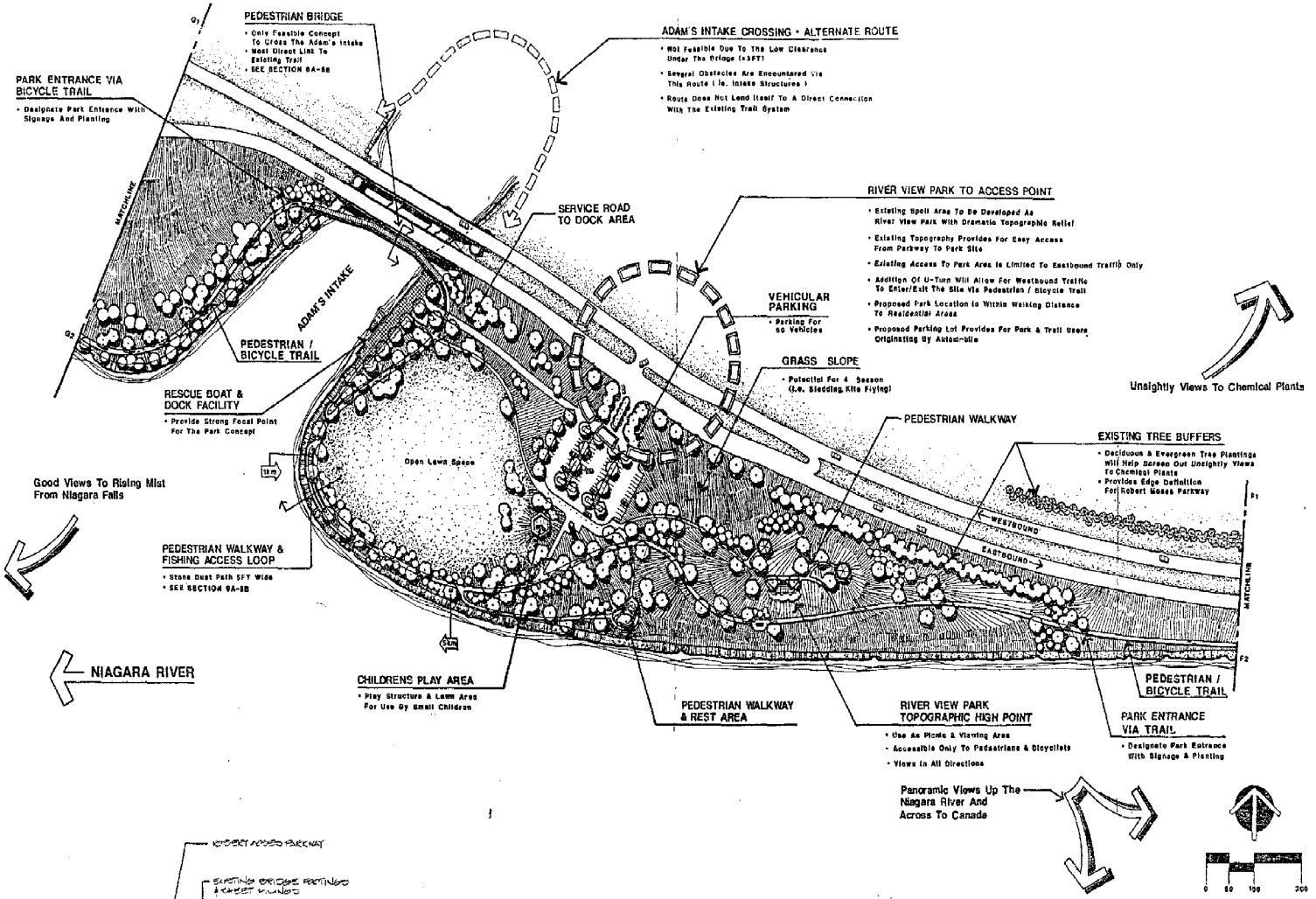
The trail continues on in a gentle serpentine fashion, whereupon it proceeds to the PASNY Spoils Area. At this point, the existing land form provides the opportunity for a mixed use recreational park (Drawing No. 5 - River View Park). The park, which serves as access point D to the trail system, is the anchor activity node. Access to the park is either by car or via the trail system. Cars currently enter the site from the parkway's eastbound lane of traffic by mounting the road curb. It is proposed that cross-overs be added within the median to allow for both east and westbound access and egress to the site. The trail enters the park from both a west and eastbound direction. At all entrances, park users will encounter interpretative signage depicting the trail system logo, information and restricted uses. The entry signs are backdropped with evergreen plantings to enhance the gateway effect. As the trail enters the park from the east, it slowly climbs to the highest topographic point on the trail system.

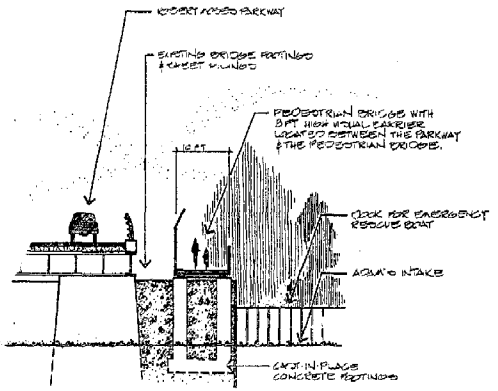
At this point an overlook area is located, consisting of paving, limestone seating wall, and landscape planting. From this overlook panoramic views exist, starting at the falls, across to Canada and up the Niagara River. The trail begins to descend as it continues to head west. For safety reasons, a separate pedestrian path is provided on this steepest of the downhills.

The trail is directed towards the river and parallels the shoreline, allowing access to the shoreline. From the trail, short paths of stonedust form pedestrian only walks and provide seating areas away from the activity of the main trail (Drawing No. 5, Plan View, and section 9A-9B).

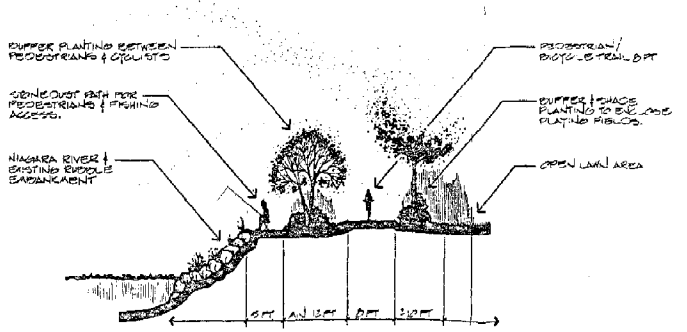
Open lawn space, along with a children's play area, is provided in the lower flat area of the park. This area also contains the central gathering area for the park. At this point, all trails, pedestrian and bicycle, converge. To delineate the area further, the historical chimney from Porter Park is relocted to this location as a focal point.

Another existing feature which provides for a gathering area in the park is the dock facility and OPRHP police rescue craft. Having this well-kept boat kept at the dock facility provides an active element for the park. The dock is proposed to be enhanced with concrete paving, decorative bollards, benches, and lighting. A major obstacle, the Adams Intake Canal, is encountered as the trail leaves the park. This hydraulic canal has a width of $\pm$250 feet. Placing the trail around the perimeter of the canal is not an option due to the low vertical clearance under the Robert Moses Parkway bridge ($\pm$3 feet). Standard requirement for trail design is a vertical clearance of 10 feet. The only alternate is the installation of another pedestrian bridge, similar to the Gill Creek crossing. (Drawing No. 5, Section 8A-8B).





BRIDGE CROSSING THE ADAM'S INTAKE SECTION 8A-8B



PEDESTRIAN WALK & BICYCLE TRAIL SECTION 9A-9B

Prepared For:
The City of Niagara Falls, New York

Project Sponsor:
NYS Department of State Division of Coastal Resources and Waterfront Revitalization

THE SARATOGA ASSOCIATES

BRISTOL, LITYNSKI, WOJCIK, P.C.
LANDSCAPE ARCHITECTS, ARCHITECTS AND PLANNERS
SARATOGA SPRINGS • BUFFALO • NEW YORK CITY

NIAGARA FALLS RIVER VIEW PARK & BICYCLE TRAIL

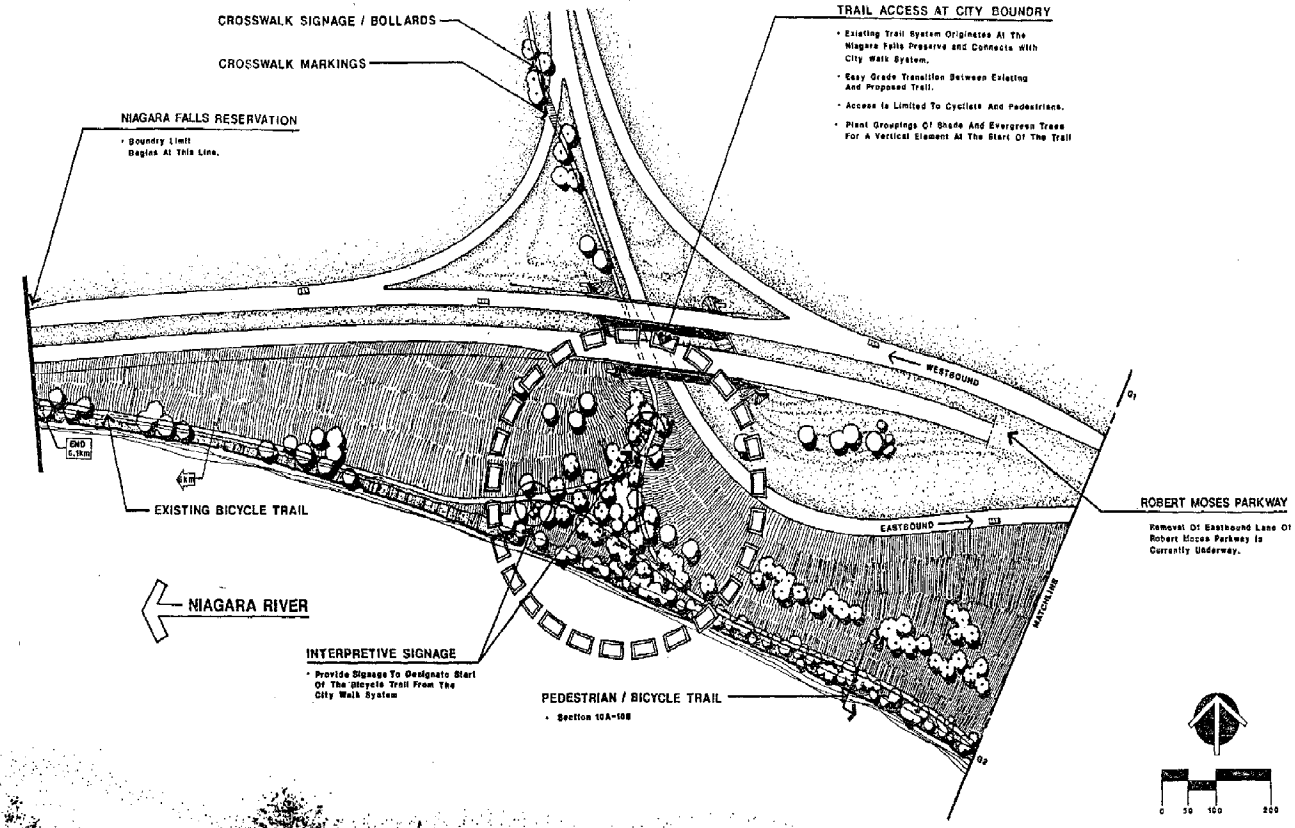
RIVER VIEW PARK

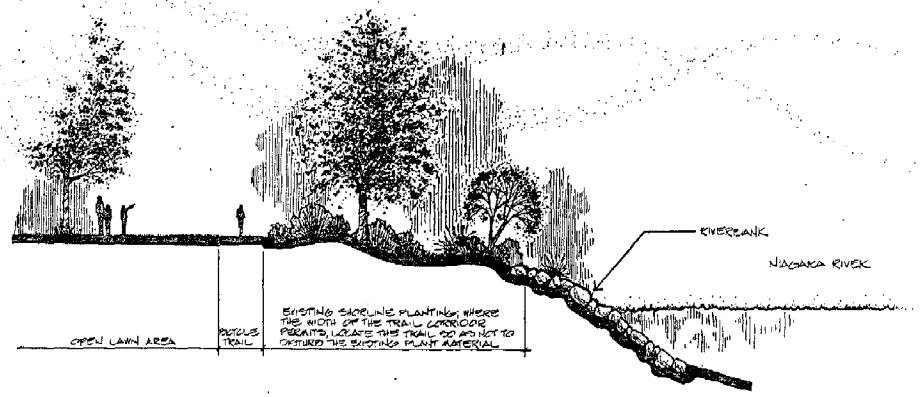
TSA PROJECT NO. 88.013

DRAWN BY TSA CHECKED BY TSA
SCALE
DATE 8/22/88
FILE
DWG NO. 5

Niagara Preserve Trail Connection (Drawing No. 6)

As the trail crosses the Adams Intake, it begins the last leg of the river trail (Drawing No. 6 - Trail Connection with the Niagara Preserve). The trail sweeps through a large open area amongst mature willow trees at which point it connects to 1) an existing trail originating from the Niagara Reservation and 2) an extension of the City of Niagara Falls public sidwealk system. As the trail connects with the city walk system, user safety is increased by utilizing a diagonal pattern of pavement striping across the Robert Moses on-ramp. Vehicular speeds should be reduced at this crossing area, along with the installation of appropriate signage. At this confluence of trails, interpretive signage, benches and landscaping is installed to signify the trail starting point for pedestrians/bicyclists heading west on the trail system.





TRAIL LOCATION ALONG RIVER EMBANKMENT SECTION 10A-10B

Prepared For:
The City of Niagara Falls, New York

Project Sponsor:
NYS Department of State Division of Coastal Resources and Waterfront Revitalization

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LANDSCAPE ARCHITECTS, ARCHITECTS AND PLANNERS

SARATOGA SPRINGS • BUFFALO • NEW YORK CITY

NIAGARA FALLS RIVER VIEW PARK & BICYCLE TRAIL

TRAIL CONNECTION WITH THE NIAGARA PRESERVE

TSA PROJECT NO. 88.043

DRAWN BY TSA CHECKED BY TSA

SCALE —

DATE 4-27-89

REV. —

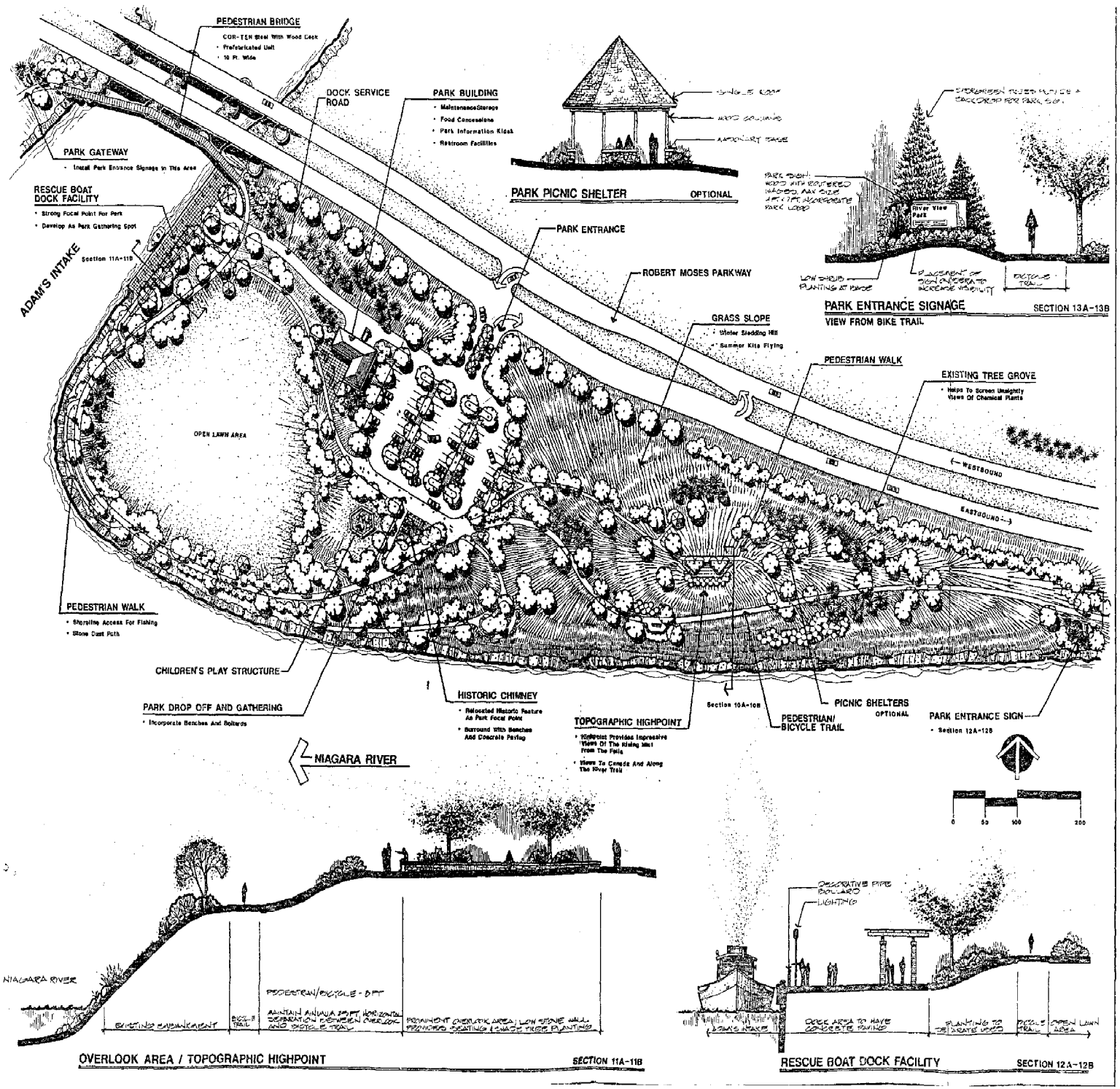
DWG NO. 6

RIVERVIEW PARK MASTER PLAN (Drawing 5A)

The Riverview Park is designed to be a multi-purpose recreational facility. It includes a variety of use areas which include parking, entry/drop-off area, active and passive recreation areas, restroom facilities (Drawing No. 5A - River View Park Master Plan). A formalized entry/drop-off area edge with interpretive signage, benches, bollards, and concrete paving. Adjoining the drop-off area is a park building which would contain maintenance facilities, restrooms, food concessions, and plaza space with benches, information kiosk and lighting and river outlook.

Further enhancement occurs around the relocated historic chimney from Porter Park. Benches, bollards and an enriched landscape and lighting embellish this area. The dock facility, a major focal point of the park, is modified by adding a decorative pergola, lighting, and bollards. It is strongly recommended that the dock facility be maintained under its current use. The police boat adds color and visual appeal to the park.

The PASNY spoils area is fully utilized by promoting a river and City of Niagara Falls overlook. The prominance of this high point will be reinforced with the full development of paved area with limestone seating walls and rich landscape treatment.



Prepared For:
The City of Niagara Falls
New York

Project Sponsor:
NYS Department of State
Division of Coastal Resources and Waterfront Revitalization

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NIAGARA FALLS RIVER VIEW PARK & BICYCLE TRAIL

RIVER VIEW PARK MASTER PLAN

TSA PROJECT NO. 88.013

DRAWN BY TSA CHECKED BY TSA
SCALE
DATE 4/27/88
REV

SHT. NO. 5A

DESIGN VOCABULARY

DESIGN VOCABULARY

The purpose of this section is to establish design guidelines for development of the River View Park and Trail. These development guidelines refer to a consistant vocabulary of material, colors and elements for use throughout the site.

Vertical and Horizontal Clearance

Pedestrians and bicyclists represent the primary group of users of the trail. The average height of a person seated upon a bicycle is 7'-4". For safety considerations, a minimum clearance of 2' should occur between the top of the cyclist's head and any overhead structures such as signs, vegetation, or fence material thereby requiring a clearance of 10 feet vertically measured from the ground plane. An 8'06" clearance is ample for pedestrian considerations. Pedal clearance for cyclists is 6", indicating any curbs or adjacent low-lying structures next to the rail should not exceed this height.

An overall pavement width of 8'-0" can accommodate two pedestrians or cyclists traveling side by side. In circumstances indicating a higher density of trail users, it is assumed someone would extend the courtesy of yielding the right of way. An 8'-0" pavement width also permits utilization of paving machines and eliminates the additional expense of hand placing the asphalt material.

Horizontal clearance between the edge of the trail pavement and any static obstacle or change in grade should be a minimum of 2'-0". Static obstacles encountered along the trail includes vegetation.

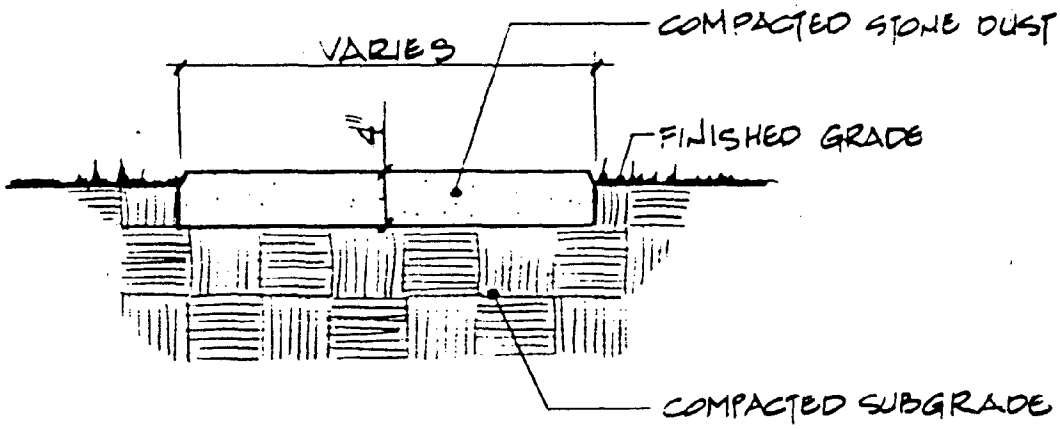
Paving Section

Materials used in constructing the bicycle and hiking trail system should be durable in terms of both maintenance and use. Asphalt paving is recommended not only because it meets the aforementioned criteria, but also because of its elastic properties and relatively low cost. Depth of up to 2" of top course asphalt paving is suggested throughout the trail. Beneath this layer of asphalt a 6" to 8" layer of appropriate subbase material should be installed. In selecting a subbase material, availability and drainage characteristics are important considerations.

Rest areas and pedestrian walkways developed throughout the site should receive an alternative form of pavement material to denote it as a special area of user activity. It is recommended that compacted stone dust be used. The change of material surfaces will denote a change of uses. This material is also an inexpensive alternate to asphalt paving.

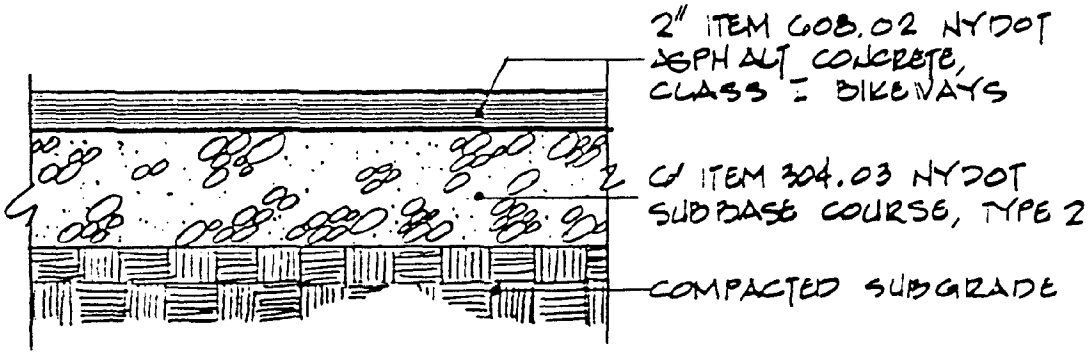
Bridge Crossings

Special bridging of the pedestrian/bicycle trail over various physical constraints will be required in two locations on the



STONE DUST PEDESTRIAN PATH

NO SCALE



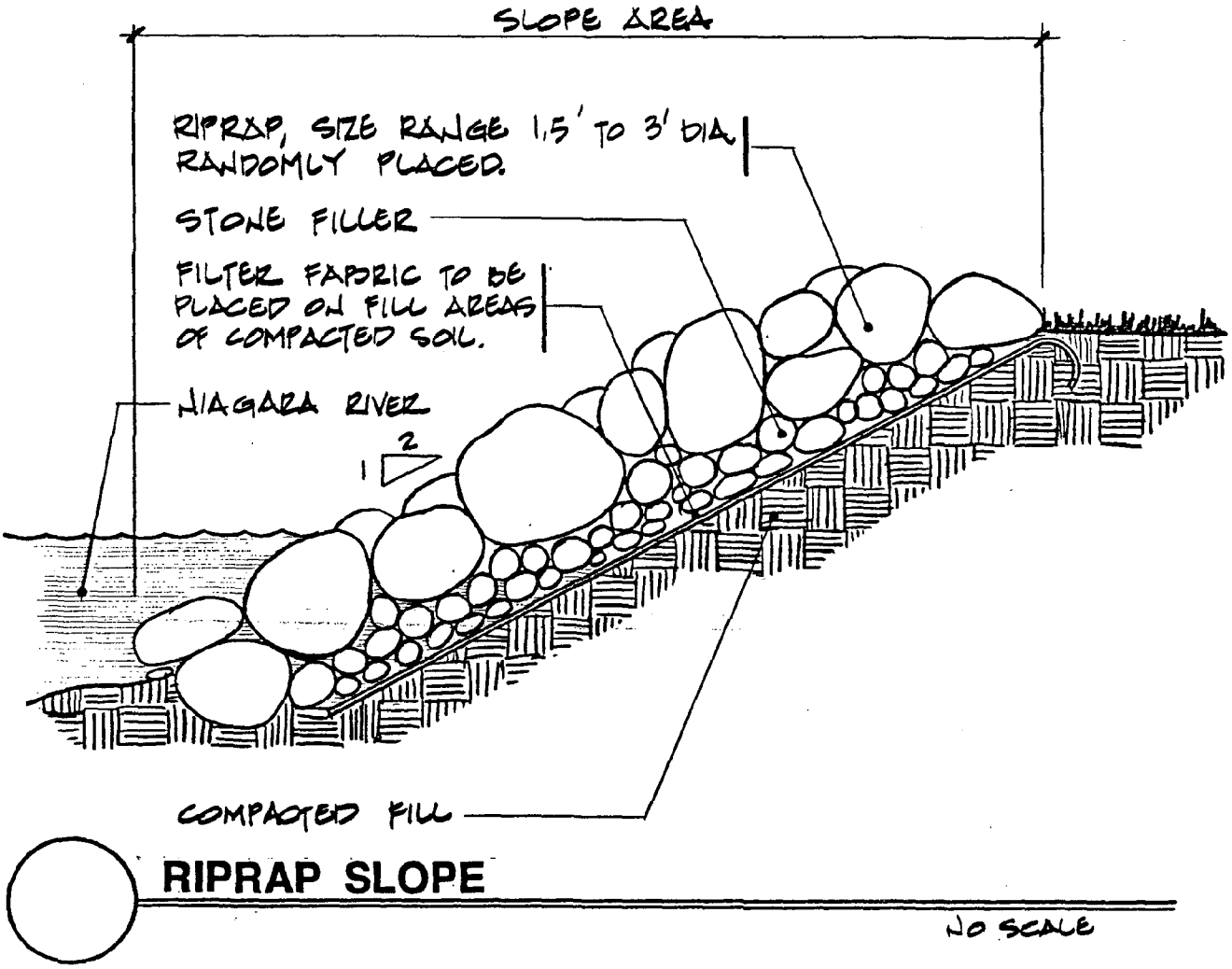
BITUMINOUS CONCRETE PAVING BICYCLE TRAIL

NO SCALE

trail. In each case, the bridge design and material should conform to the New York State Department of Transportation guidelines. Each bridge should be uniformly 10' in width with the upper portion of each railing angled away from the trail to minimize any interference with bicycle handlebars. It is recommended that COR-TEN steel be utilized in the construction of all bridges. This will minimize any potential for arson which may occur, particularly in the industrialized areas. This type of steel weathers to a brown earth tone finish, suitable for the character of this park.

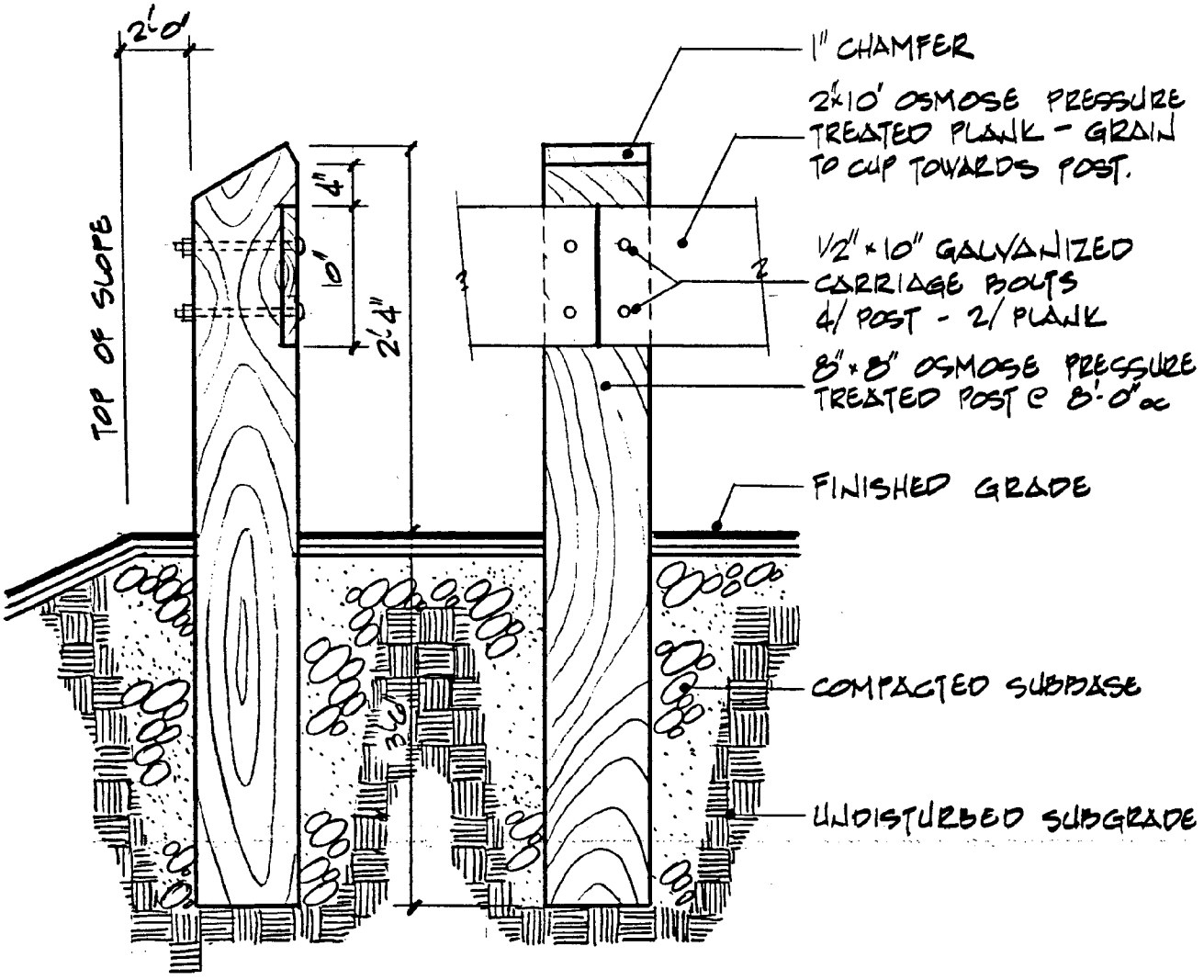
Rip Rap Slope Protection

As the trail enters the Grand Island Bridge underpass, the river bank requires widening. The placement of rip rap along the shoreline will adequately stabilize the embankment and supply a substantial enough base on which to place the asphalt trail. With trail located adjacent to the water line in this area, it is recommended that timber guardrails be placed in this vicinity. This will ensure safety for faster-moving bicycles.



RIPRAP SLOPE

NO SCALE



TIMBER GUARDRAIL

NO SCALE

Horizontal and Vertical Layout

The pedestrian/bicycle path is classified under a Class III bicycle trail. It is defined as any bikeway which shares its through traffic right-of-way with either moving motor vehicles or pedestrians (Safety and Location Criteria for Bicycle Facilities), Federal Highway Administration, February 1976). The proposed trail's only contact with motor vehicles is at perpendicular road crossings. The trail shares a majority of its route and bridge crossings with pedestrians and bicyclists. Where the crossing of different types occur, a series of safety measures will be installed. Wood bollards will be installed on the trail, five feet in from the road edge. These bollards will be spaced at five feet intervals, perpendicular to the trail. Diagonal stripes painted trail route as it crosses the road. Signs are also to be posted -- warning signs for motorists and a stop sign for trail users.

Design criteria regarding design speed, pavement gradients, curvature, and sight stopping distance, includes the following:

Design Speed: A great many variables (type of bicycle, age and condition of cyclist, wind, etc.) affect bikeway design. First, design speed must be established. Nearly all bicycles travel within a range of 7 to 15 mph; the average is 10 mph. The American Association of State Highway and Transportation Officials (A.A.S.H.T.O.) recommends designing for 15 mph under most conditions, and 20 mph for long downhill grades. Although extremely long downhill grades do not exit on the trail, recent studies suggest that 30 mph is a more realistic design speed for these situations.

Grades: Acceptable grades vary with the length of the slope. A.A.S.H.T.O. only lists "maximum" slopes/distances.

Slope	Maximum Distance
2%	1,500'
5%	300'
10%	not acceptable grade except for ramp access to above grade crossing up to 15%)

Bikeway planning criteria and guidelines, "Institute of Transportation and Traffic Engineering" lists the "desirable" relationships between slope and distance.

Bikeway Gradient	Desirable Length of Grade
1.7%	590'
2.0%	410'
2.5%	262'
2.9%	200'
3.5%	148'
4.0%	102'
4.5%	82'

These figures are preliminary guidelines only. When potential user types have been determined, precise slope/distance relationships may be determined according to formulas as specified in U.S. Department of Transportation for Safety and Locational Criteria for bicycle Facilities (see User Manual Volume II: Design and Safety Criteria, pp.44-55).

Our recommendation is to design to the "desirable" guidelines. Where practical limits of the site cause greater slope/distance relationships, A.A.S.H.T.O.'s figures should be considered maximum. Greater slopes will discourage usage and cause excessive speeds.

For pedestrian lanes, the controlling factor should be suitaable for the wheelchair user. Wheelchairs can negotiate a sustained 5% grade if 5' level areas are provided every 100'. Three percent grades are preferable, and 8.33% is maximum, and then only with 5' level areas every 30'.

Curvature - Design radii vary according to design speeds. For the design speeds selected in the beginning of this section, 15

mph and 20 mph, A.A.S.H.T.O. recommends radii of 35' and 70' respectively. These standards were compared with those of two other sources and found to be the most stringent. We would recommend adhering to A.A.S.H.T.O.'s standards; again because ease of negotiating the trail affects usage. In areas where a 35' radius cannot be accommodated, the following recommendations are appropriate:

20' radius - desirable minimum
15' radius - comfortable minimum
8' radius - absolute minimum

Sight Stopping Distance - Sight stopping distance is the distance required to recognize an obstacle and stop short of it.

Procedure for determining sight distance and braking for bicycle facilities are similar to procedures for determining these characteristics for highways. Stopping distance is given by the formula:

$$S = 1.47\ TV + V^2/30\ (F \pm G)$$

Where:

S = stopping distance in feet

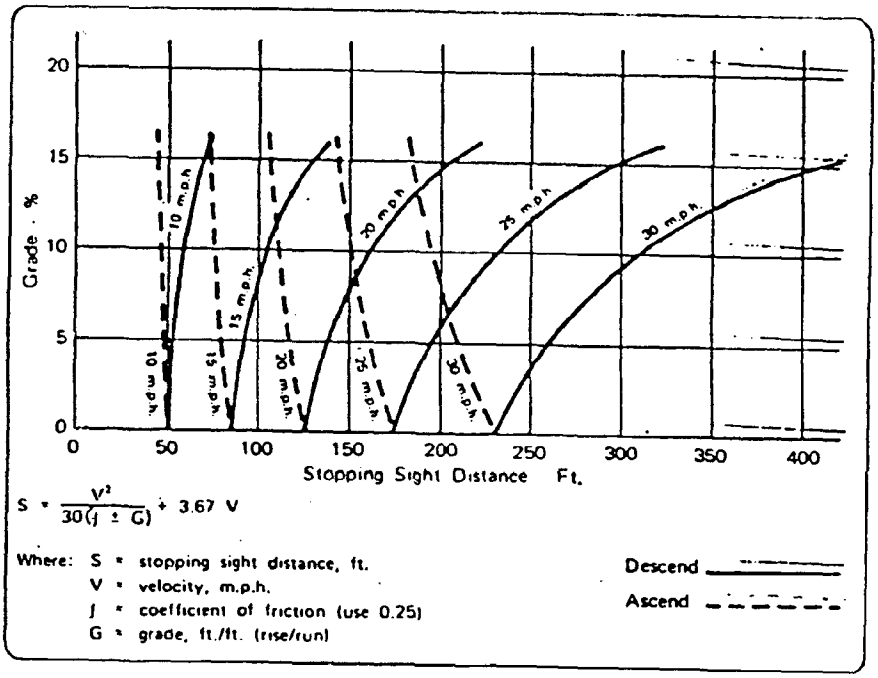
T = perception/reaction time (usually 2.5 seconds)

V = Initial speed in MPH

F = coefficient of friction (.25)

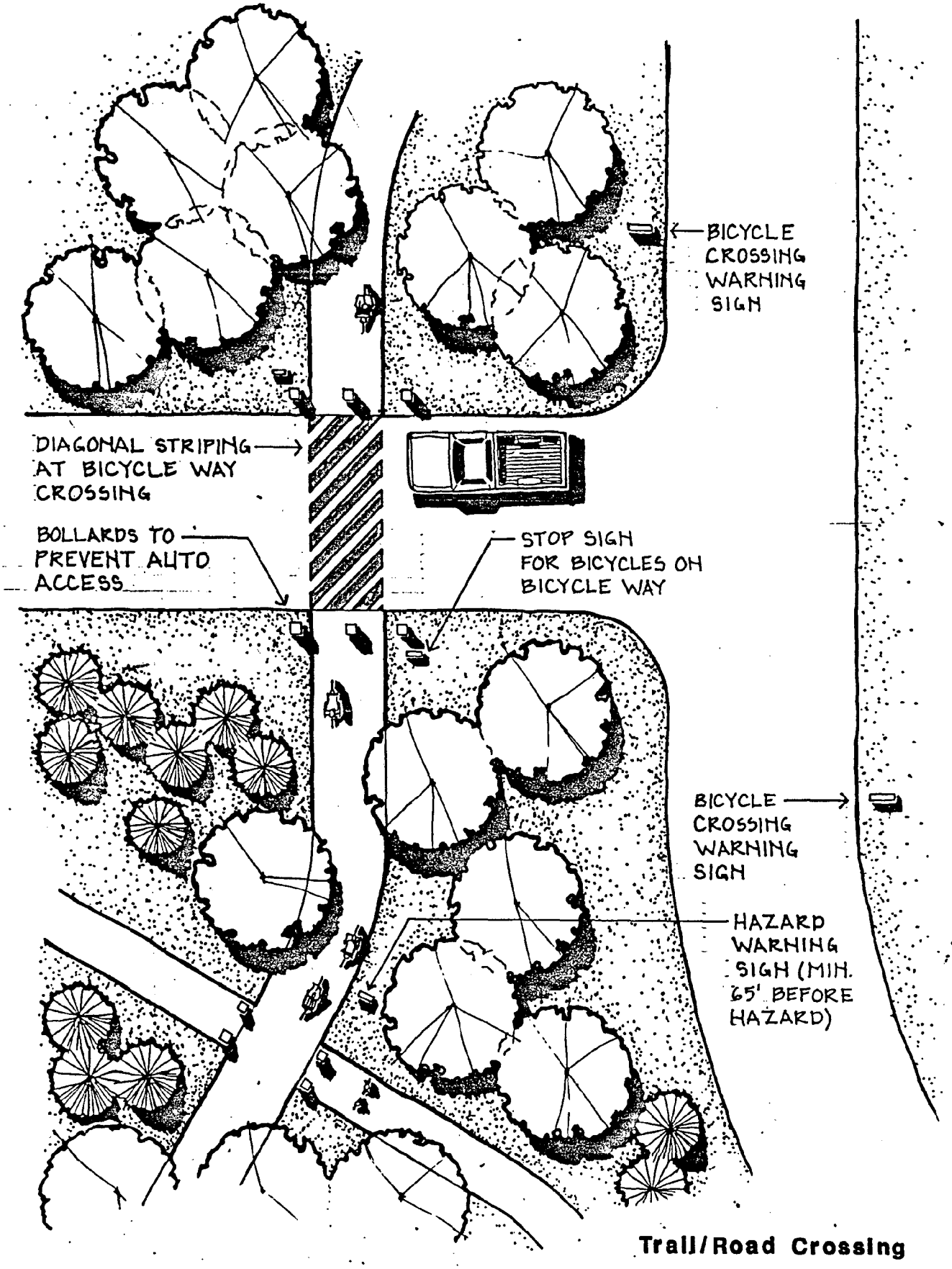
G = grade, ft/ft

This is the standard highway engineering formula for stopping distance. The extremely low coefficient of friction (.25) is suggested to account for the ineffectiveness of bicycle brakes in wet conditions and to provide a conservative allowance for stopping distance.

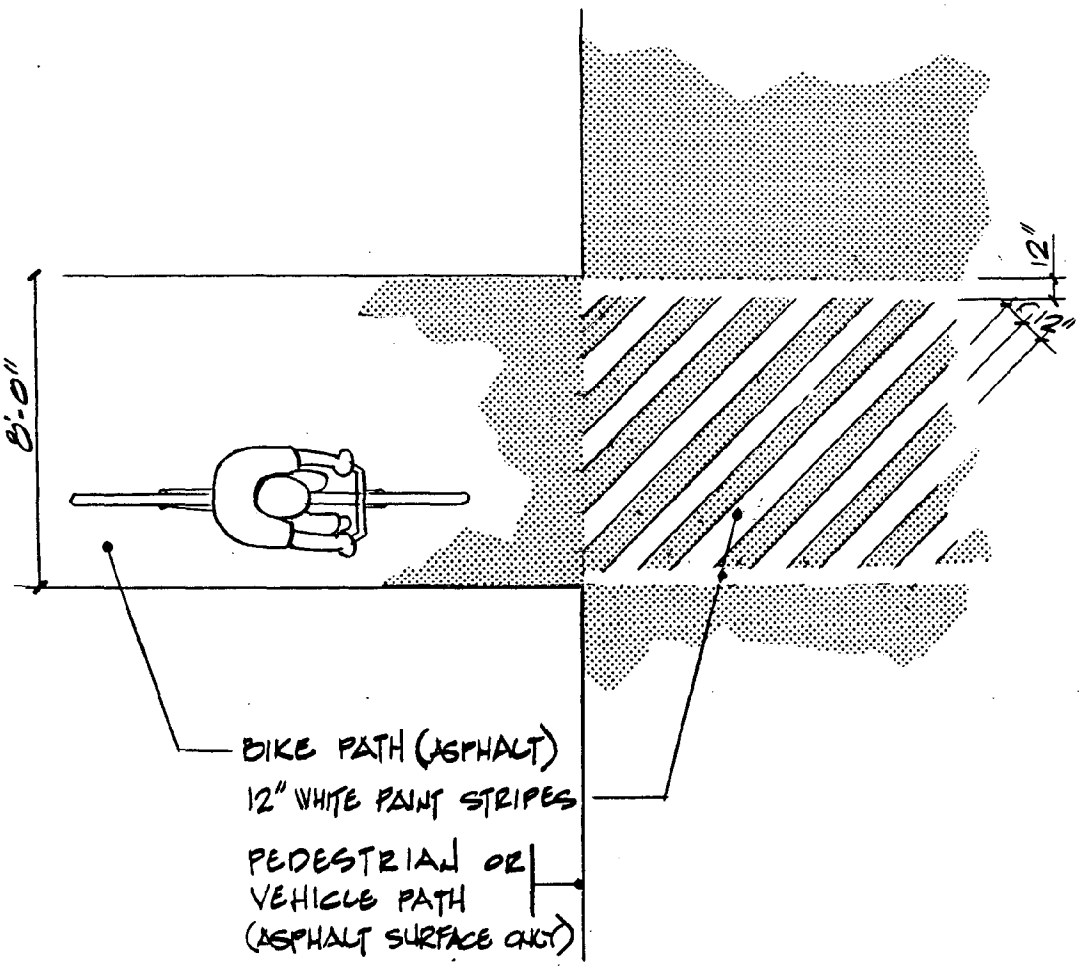


STOPPING SIGHT DISTANCE

Source: Oregon State Highway Division
"Bikeway Design" Manual 1974



Trail/Road Crossing



CROSSWALK PAVEMENT MARKINGS

NO SCALE

SIGNAGE

Signage is one of the primary communication elements used throughout the trail. Three general categories of signs and pavement graphics are recommended for the Niagara Falls pedestrian/bicycle trail and are outlined below:

Identification - to identify and orient the user to the trail and facilities along the route. These signs identify the route and facilities along it. These signs reassure the user periodically that they are still on the right route. These are important as the trail enters and exits activity nodes; i.e., River View Park. This category of sign would carry the trail logo throughout the system.

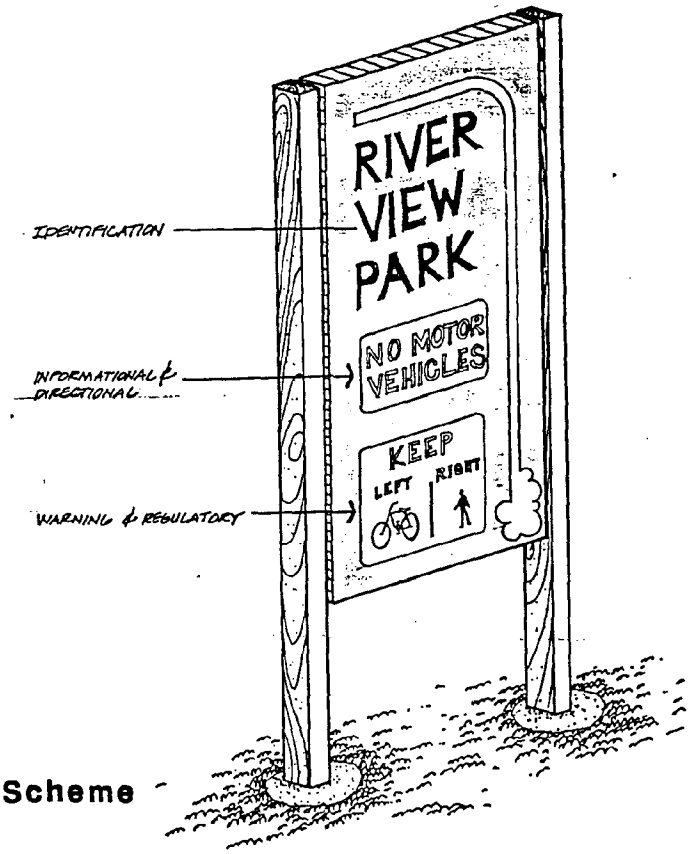
Informational/Directional - This category of signs includes trail layout maps, historical features, activity node announcement, rest areas and overlook point. This group of signs can even intepret views one uses from the overlooks. Distance markers are placed in this category.

Warning and Regulatory - This category of signs will warn the user of hazards (i.e., "Stop Ahead" Watch for Pedestrians") and regulate and control use of the trail (i.e. "No Bicycles" "Yield").

A uniform sign system is to be developed and used throughout the trail corridor. Several design criteria should be considered in

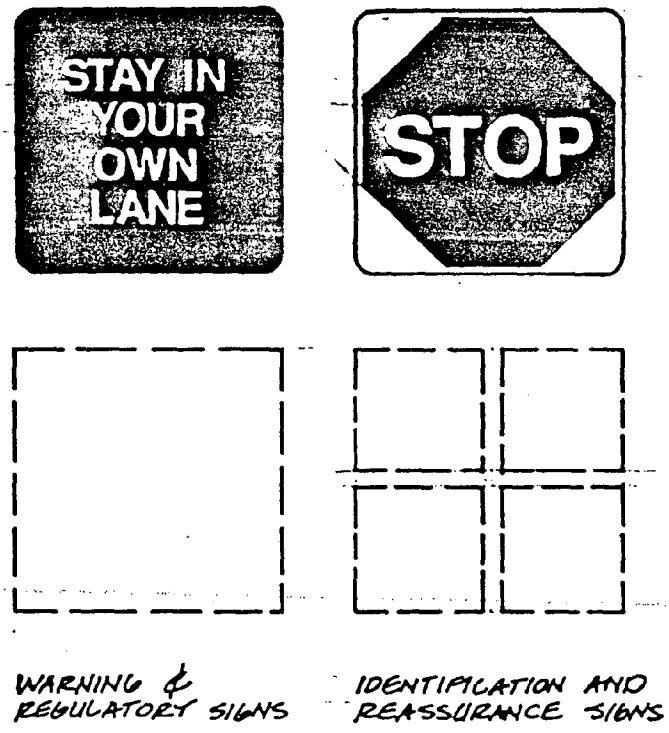
the design development of the sign system. Considerations should include legibility, letter forms, project logo durability, continuity and changeability.

Identification signs will display the trail logo with the desired color scheme. Colors chosen should be unique to the trail system. In order to reduce maintenance, it is recommended that signs be developed on a metal surface. Identification signage should be a maximum of 20 inches square and the largest of the three sign groups. Identification sign lettering should be in all upper case.



Sign Scheme

The informational and directional signs follow the same color scheme set forth in the trail logo. This group of signs is more descriptive in nature. Messages shall be as simple and direct as possible. Cluttered signs are confusing and cannot be read or understood in the time required. The lettering for informational signs should be in upper and lower case. Warning and regulatory signs are to conform with the Manual on Uniform Traffic Control Devices for Streets and Highways, National Joint Committee on Uniform Control Devices, U.S. Government Printing office, 1971.



Relative Sizes of Signs

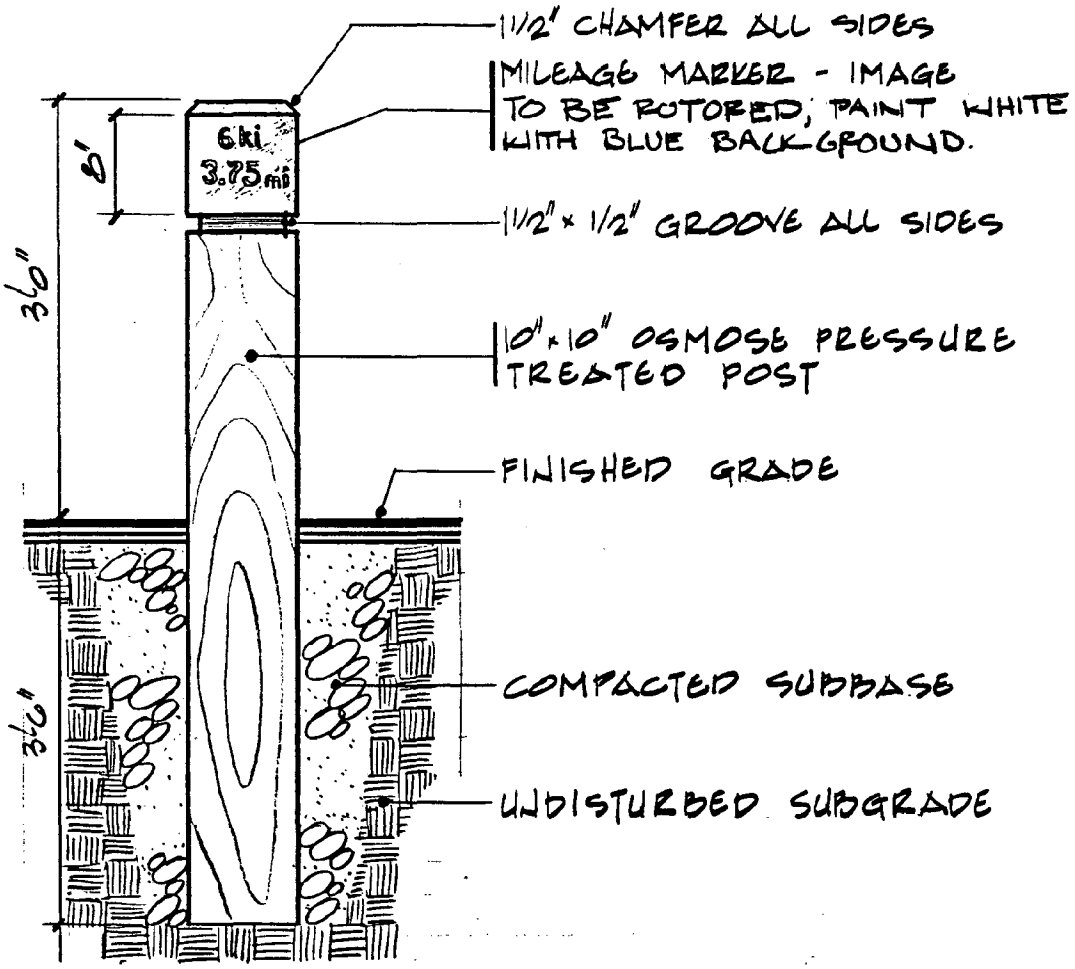
These regulatory signs are 12" x 12" symbols and would be designed so that they could be fastened to a variety of structures. The free-standing sign board would be the most common mode but in places it may be desirable to make use of other sign posts, bench backs, walls, light poles, etc. as mounting surfaces.

Location and Spacing: Warning Markers - Warning signs should be posted 65' prior to any hazard. Where the bike lane crosses a street or service road, a "Bike Route" sign should be posted one-half block before it begins. These signs should be 24" x 18" in size and colored at least 5'-0" above the road surface along the service roads and a minimum of 7'-0" above the street surface in the City, utilizing existing poles for mounting wherever possible.

Optimim sign mounting height for the bicycle rider is 4-5' (bottom of sign to pavement) but 10' mounting heights should be used in isolated spots where vandalism might be a factor.

Signs along the trail should be placed 3' from the edge of the bicycle lane pavement.

At the beginning of the bike lane there should be a "Pedestrians/Bicycles Only" sign, to eliminate any doubt that out-of-town motorists might have as to whether or not cars may use these corridors.



DISTANCE MARKER

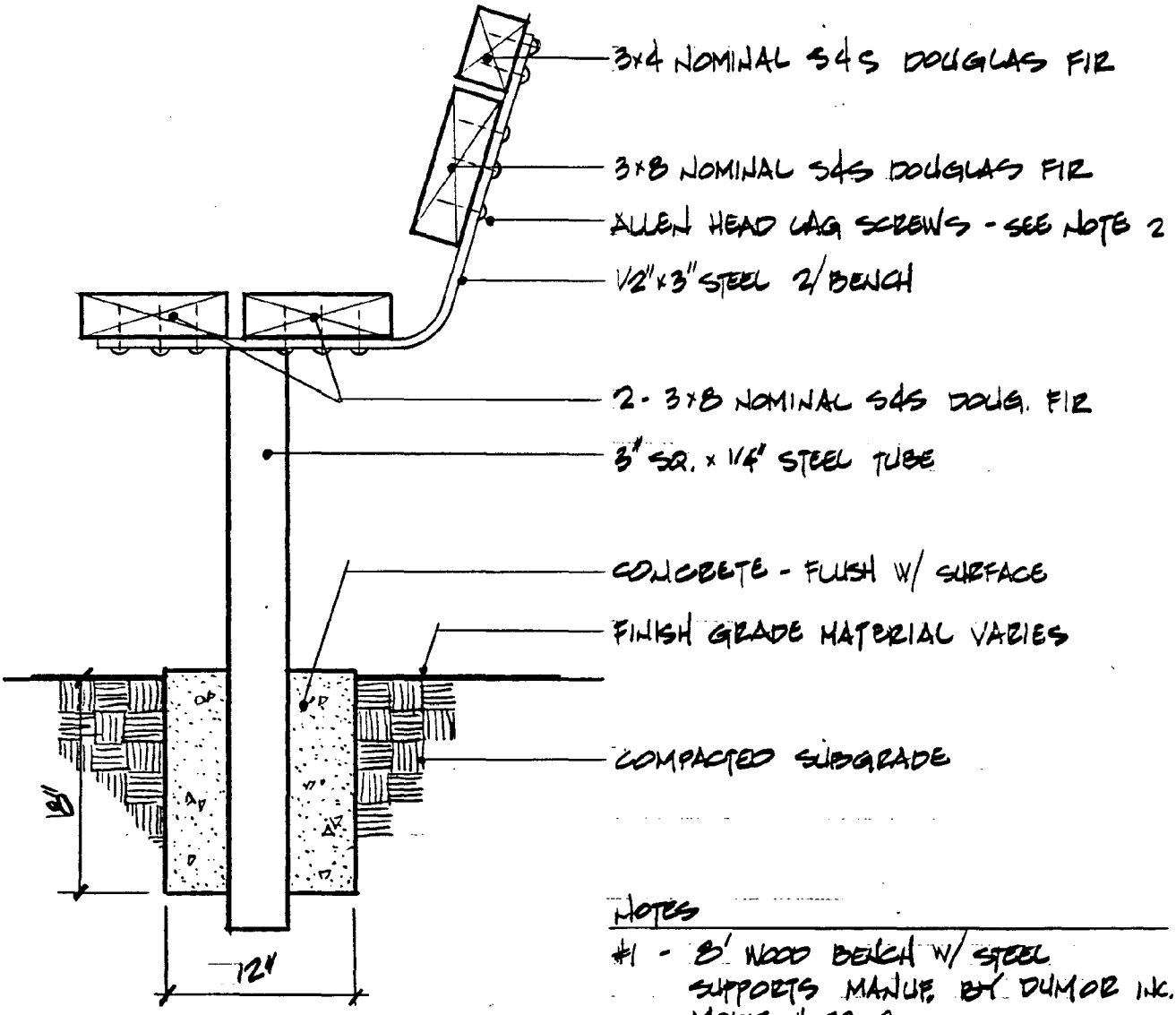
NO SCALE

DESIGN VOCABULARY FOR THE ACCESS POINTS

In concept, the access points such as the PASNY Water Intake and the Century Club terminus point, provide a direct route to the river isolated by the parkway. These areas can be described as gathering points or activity nodes along the trail corridor. These spaces once developed will provide rest areas along the river trail. Uses also include fishing sports, trail access, overlooks, short strolling loops, and picnicing. For the intake trail corridor to function as one entity, it is necessary to be consistant with the type of exterior elements used throughout the project. What follows is a recommended design vocabulary for those required elements. It concerns itself with recommendations for benches, bollards, lighting, railings, trash receptacles, paving material and bike racks.

Benches

It is recommended that all benches be provided with wood seats and backs. Orient the bench in the direction of the most prominant view from that given location. Benches should be pedestal mounted, as illustrated, with all metal supports painted flat black and the wood stained a medium brown. These benches are similar to The DuMor Co. model 38 bench.



NOTES

#1 - 8' WOOD BENCH W/ STEEL SUPPORTS MANUF. BY DUMOR INC. MODEL # 38-80

#2 - ALL WOOD FASTENERS: 3/8"ϕ x 2" LONG PLATED ALLEN HEAD LAG SCREWS.

#3 - ALL STEEL TO HAVE BRONZE ENAMEL FINISH BY MANUFACTURER.

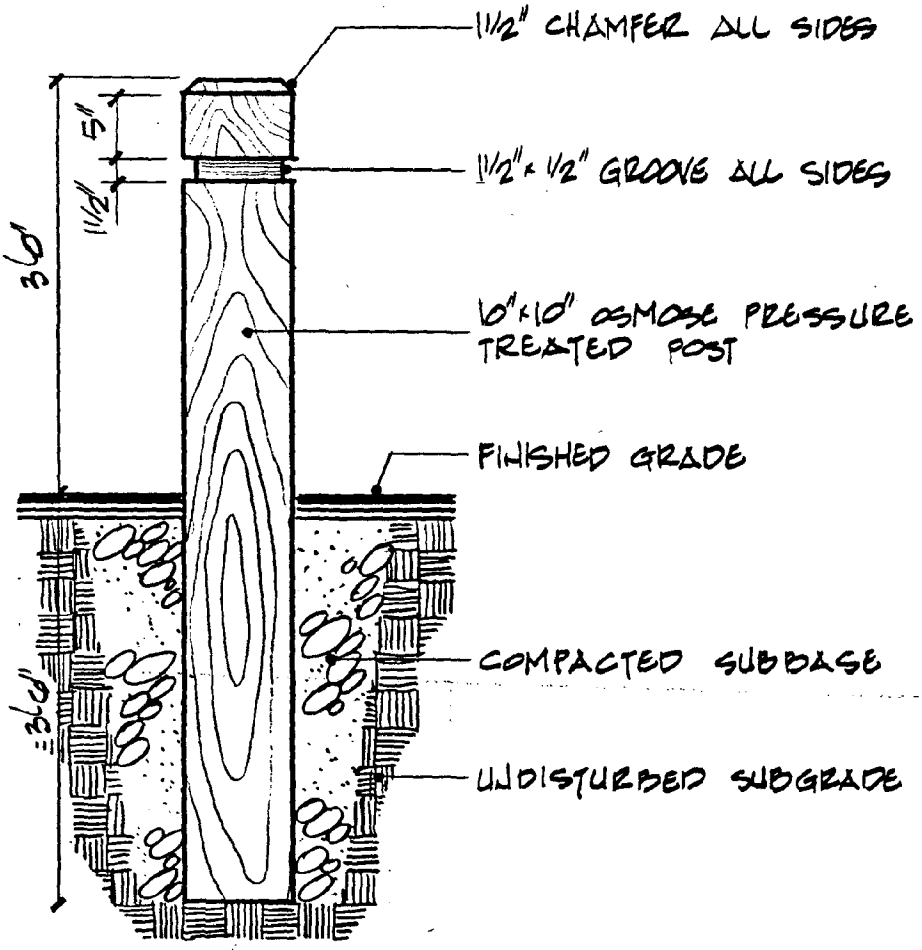
WOOD BENCH

NO SCALE

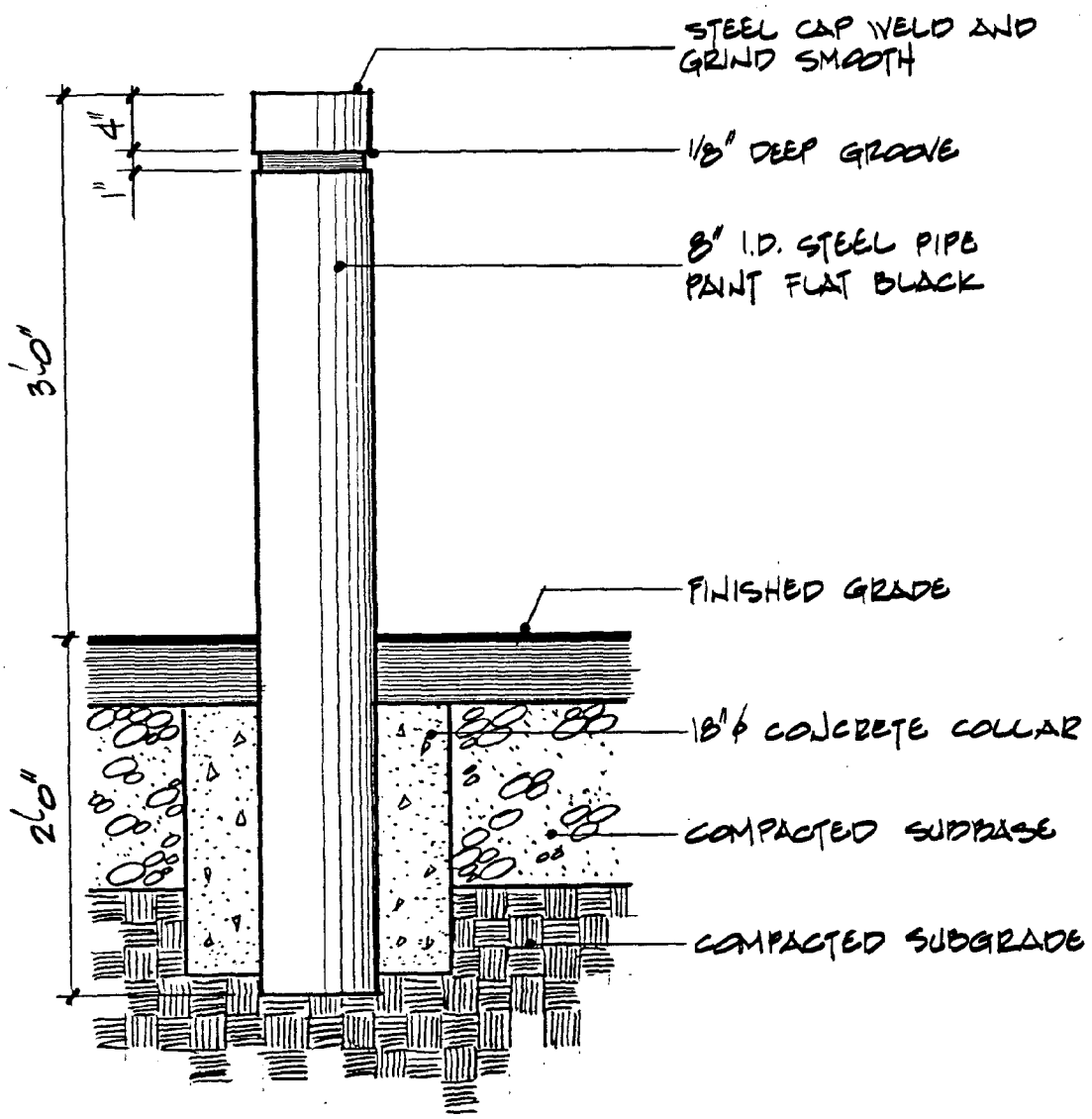
Bollards

Two basic bollard types are recommended for use:

- o Metal - around dock areas and river walls, to carry over the nautical theme. Materials consist of an 8" diameter steel pipe, concrete filled and painted the blue/white color scheme.
- o Wood - for informal areas and along the pedestrian/bicycle trail. The painting of these bollards is not recommended. They age to a silver/gray naturally.



TIMBER BOLLARD



DOCKSIDE METAL BOLLARD

NO SCALE

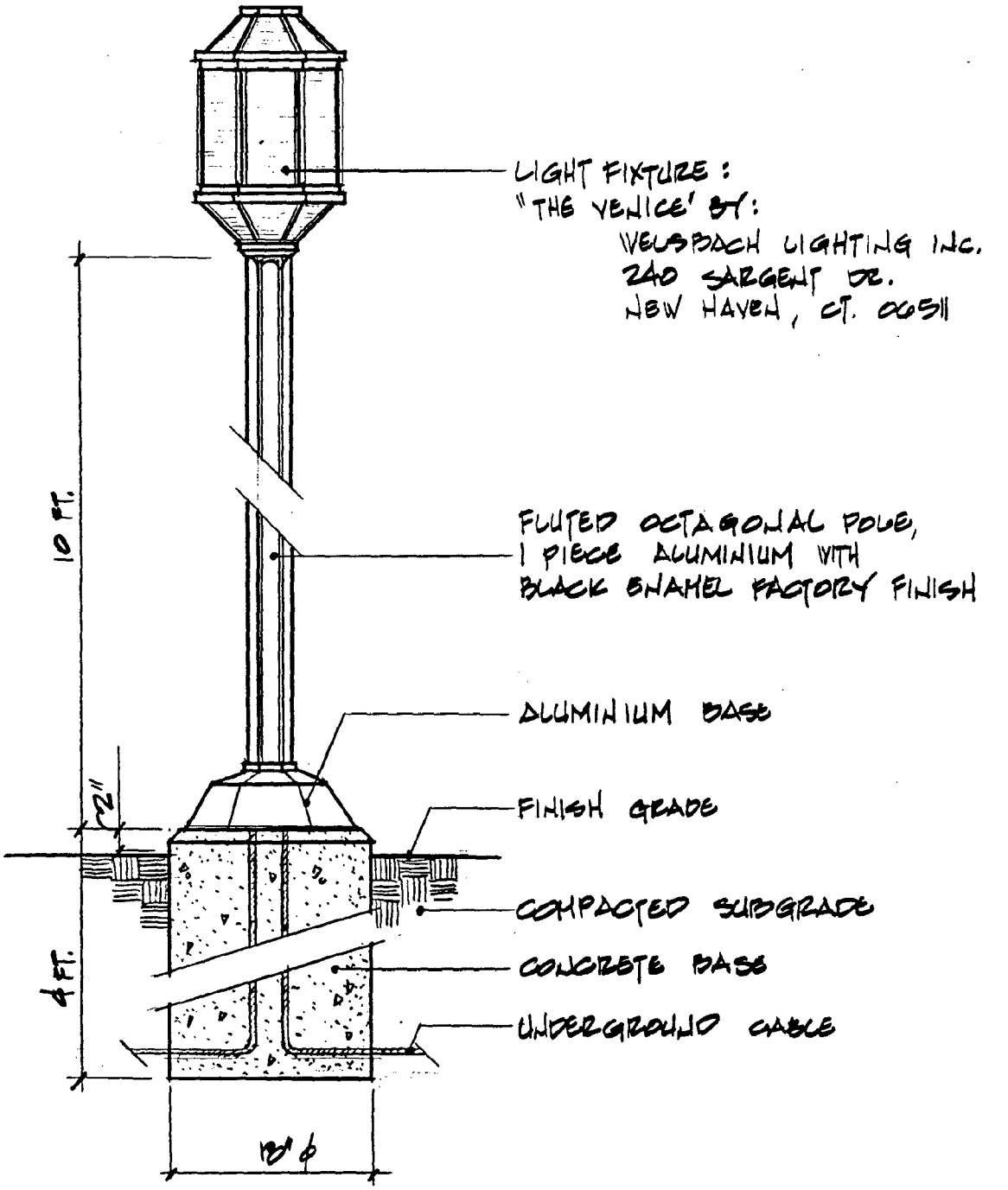
Light Fixtures

The objectives of lighting program are as follows:

- o Development of an organized lighting system
- o Provide lighting at key areas only
- o To reinforce the relative design concept.

In order to accomplish this, the following concepts are recommended:

- o Select only one style of light fixture for uniformity in features. It is recommended to use a light fixture with a nautical theme such as "The Venice" by Welsbach Lighting, Inc.
- o Light fixture will maintain the color scheme and would be painted white or blue.
- o Light fixtures will be placed in specific loctions to enhance the geometry of the space (i.e., along the pedestrian promenade at the PASNY Water Intakes).

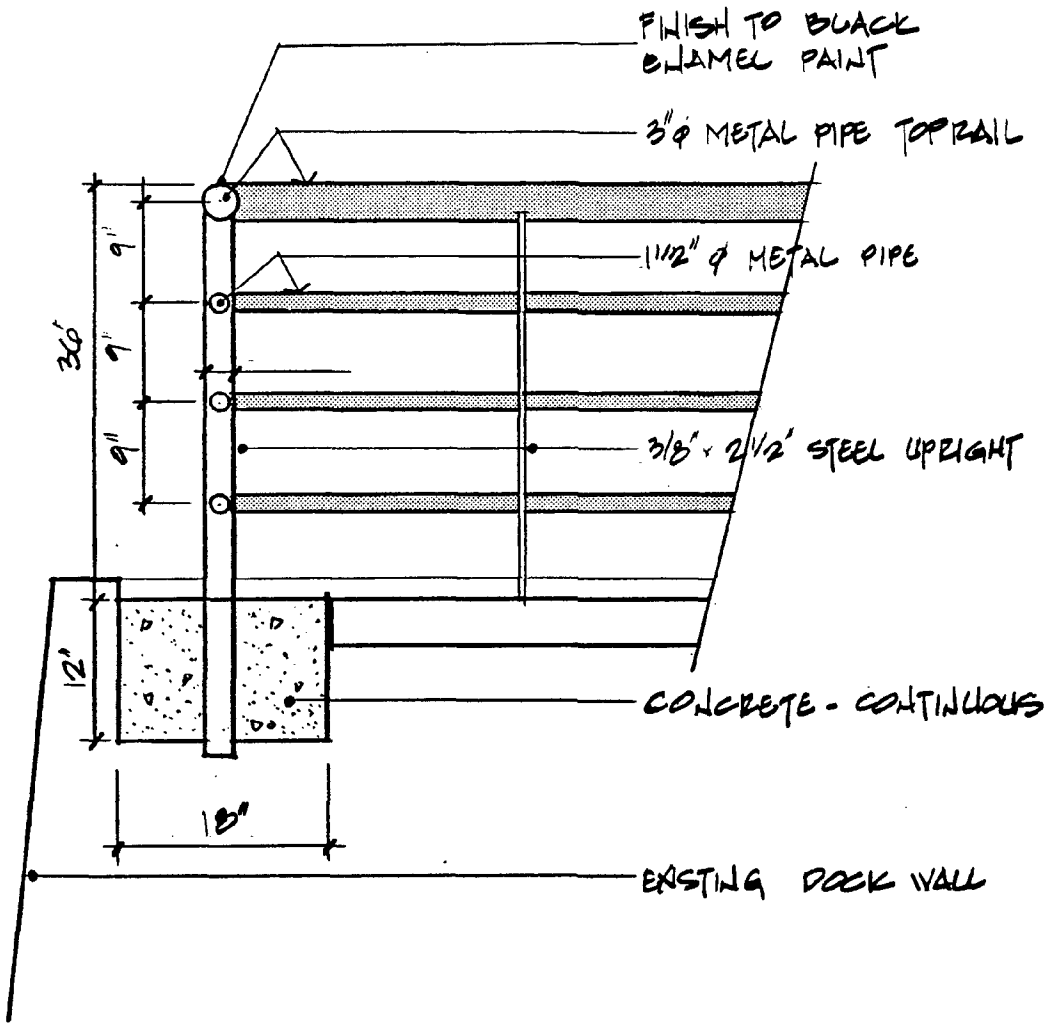


LIGHT FIXTURE & POLE

NO SCALE

Railings

Metal railings are proposed for use along the dock facilities. It is recommended that these railings follow the detail supplied which corrolates with the railing at the PASNY Water Intake river wall. The color scheme calls for black rails.

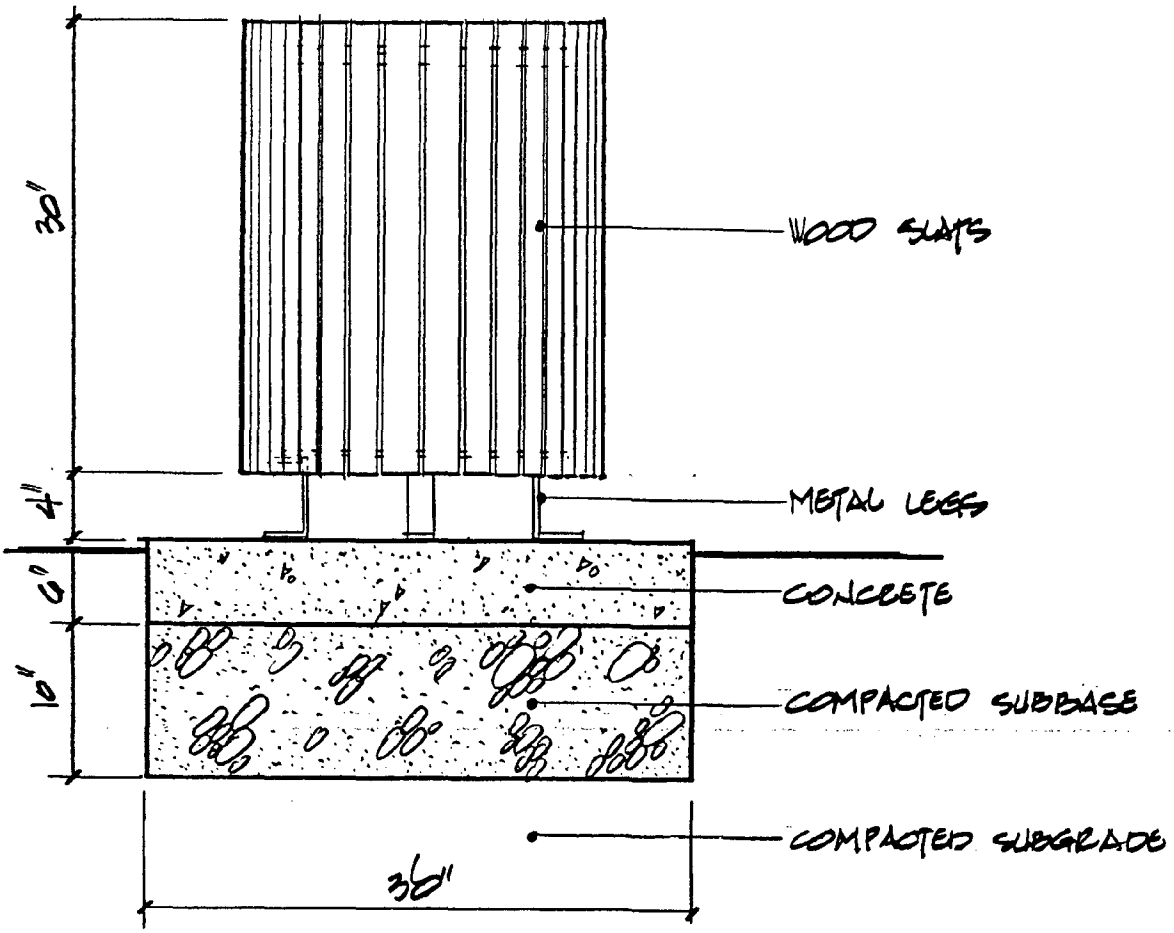


METAL HANDRAIL

SCALE: 3/4" = 1'-0"

Trash Receptacles

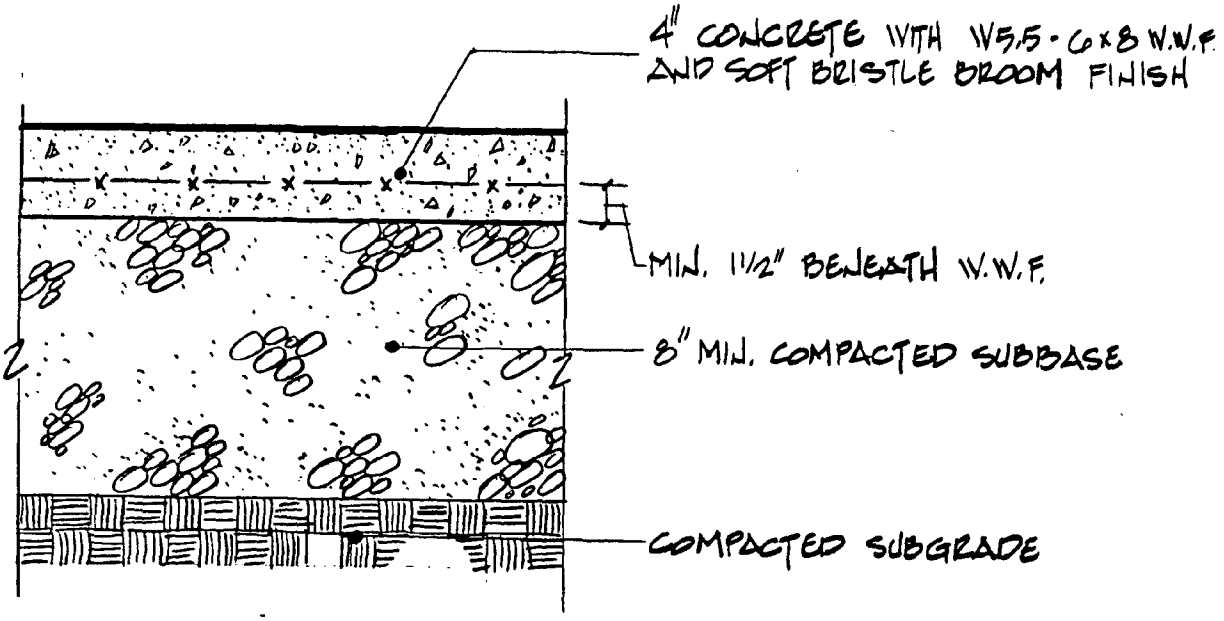
Provide receptacles in areas of high pedestrian concentration (i.e., River View Park). Location of trash receptacles should be a minimum 25 feet away from benches, due to a potential odor and bee problem. It is recommended that a circular wood enclosure be stained to match the wood benches. A removable interior metal container withe drainage holes should be permanently secured by metal brackets in a concrete footing. This receptacle is similar to DuMar Inc. Model L/1.



TRASH RECEPTACLE

Concrete Paving

For areas adjacent to dock facilities and at larger pedestrian drop-off areas, concrete paving will be used. Scoring patterns can be introduced to create various textures and patterns. The scored concrete will highlight gathering areas and contrast with the asphalt bike trail and stone dust pedestrian path.

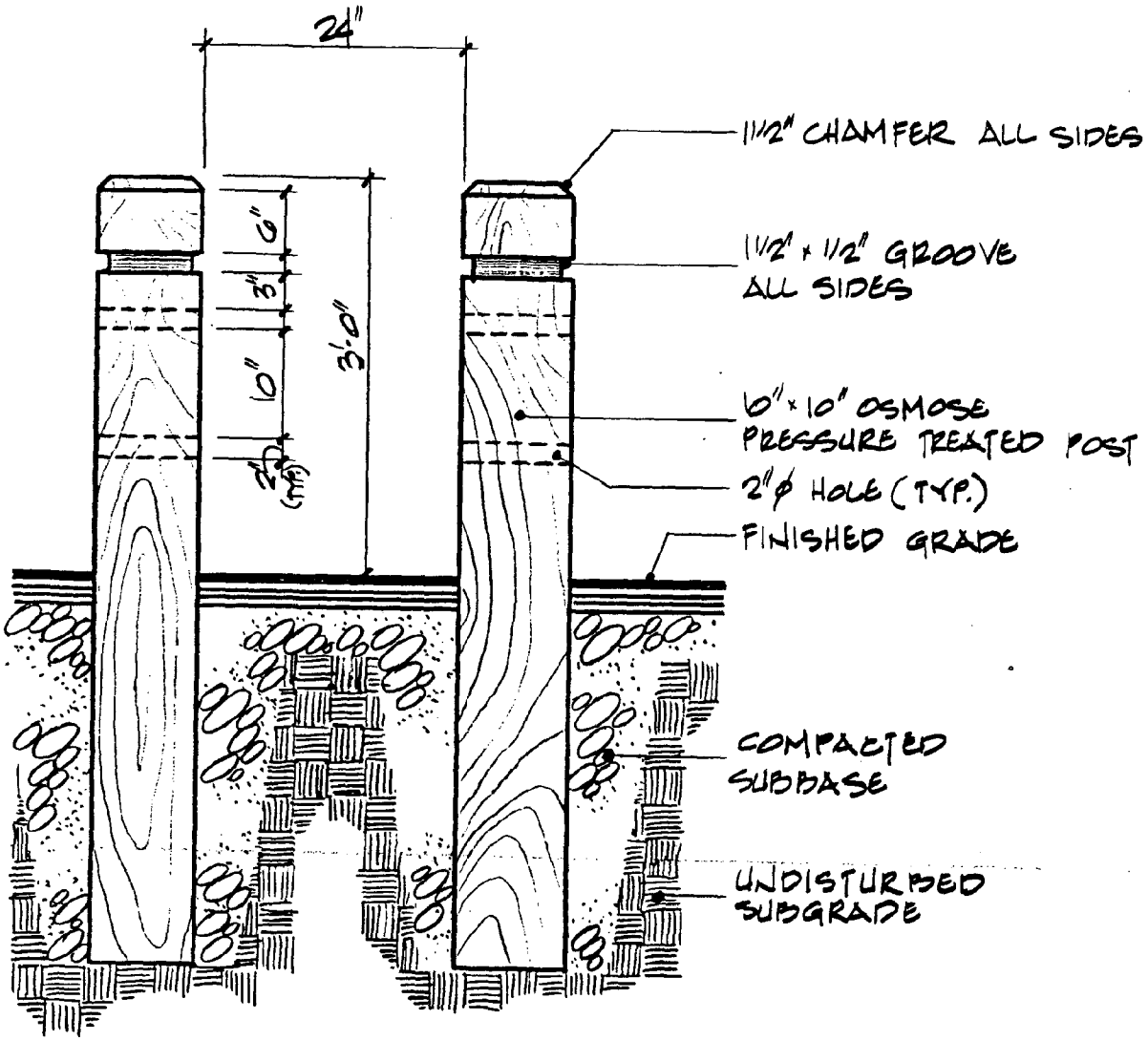


CONCRETE WALK

NO SCALE

Bicycle Rack

It is recomended that a timber bicycle rack be used. The configuartion is similar to that of the timber bollard. Location for these bicycle racks is recommended for gathering oints (i.e., overlooks and playing fields).



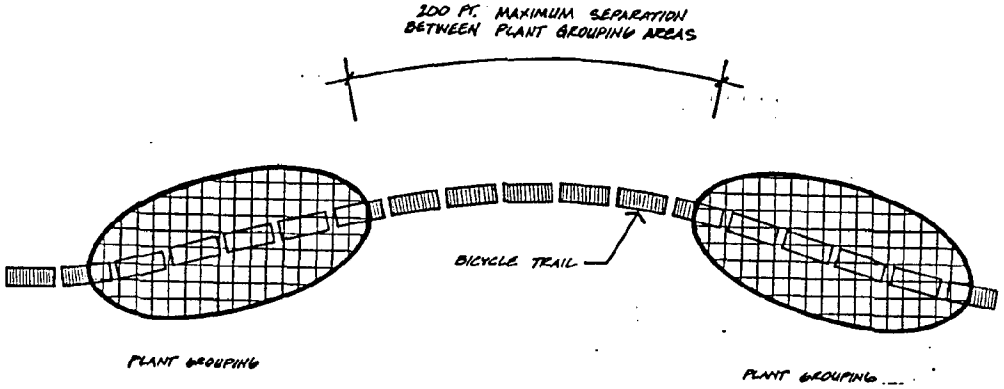
TIMBER BICYCLE RACK

NO SCALE

Landscaping

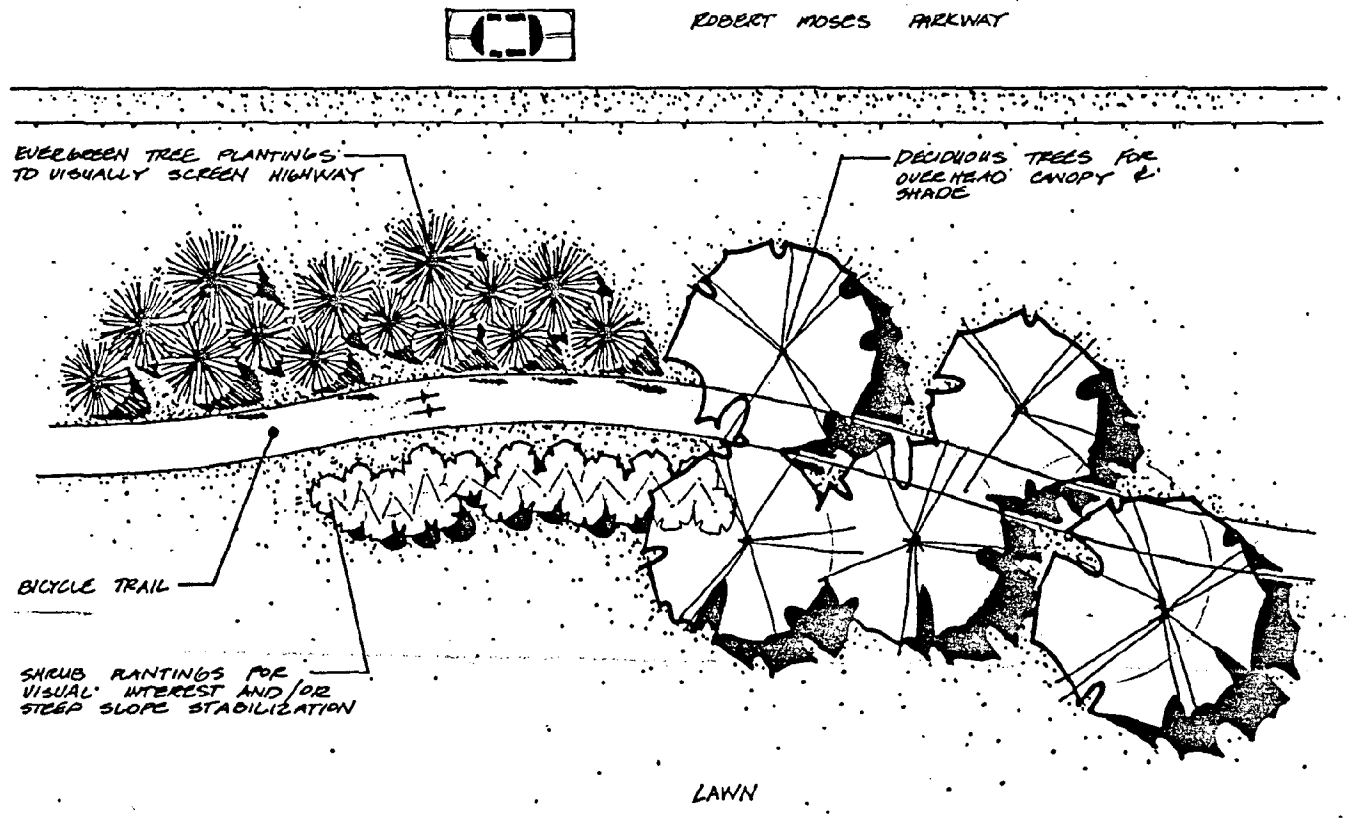
The overall concept of the landscaping scheme is to create distinct spacial definition through the use of existing vegetation and the installation of new plant material. Two types of planting schemes will be utilized; that of an overall natural image along the trail and a formal image applied to the activity modes.

Throughout the site, planting along the trail will maintain a naturalized format. Existing tree groups are to remain and the trail location will utilize them in a spacial context by passing through or next to them. New plantings are to replicate the informal quality of existing vegetation. These groups will be placed further than every 200 feet along the trail.



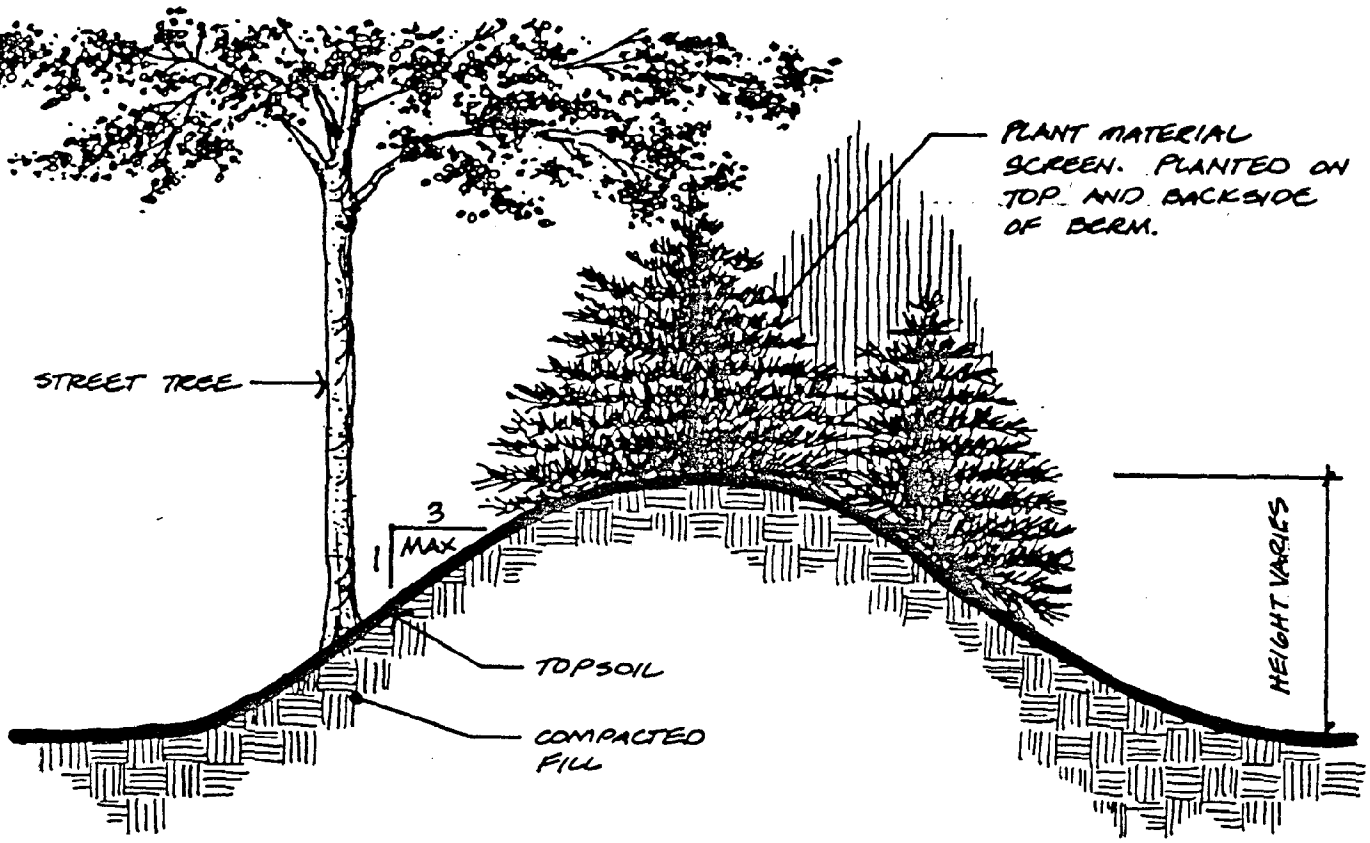
PLANT GROUP SPACING

This spacing will break the trail up spacially into smaller corridors, reducing the monotony asociated with long open roads. Plant types include larger shade trees to form an overhead canopy, shrubs to articulate the ground plan, and evergreen trees to visually contain the spacial sequence. Larger evergreen masses are also used to screen abutting uses, namely the trail as it approaches and parallels the parkway.

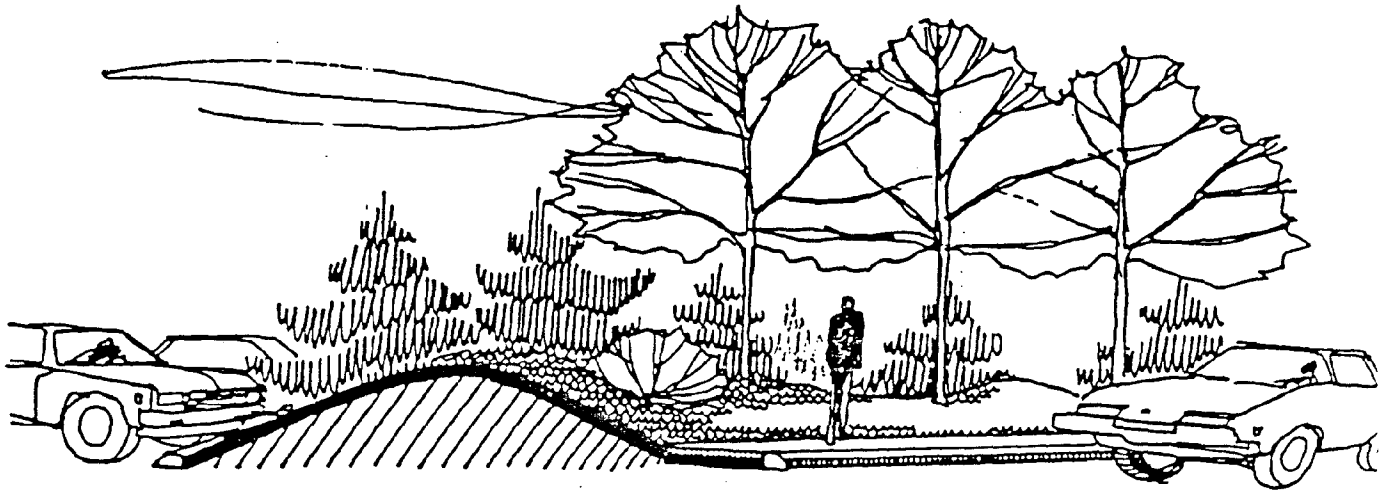


PLANTING GROUPS

Berming and Planting Recommendations

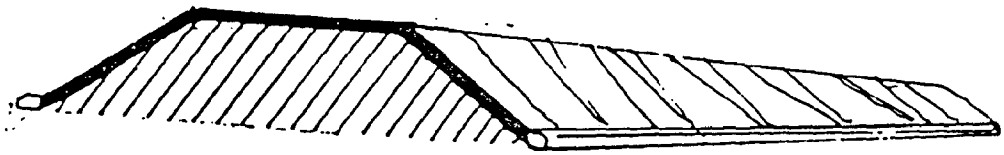


Much of the land that makes up the access areas is virtually flat. Earth berms are one of the most naturalistic and positive means of giving visual interest and screening between areas. This function of berms can be further reinforced through the addition of planting. The cross-section view below illustrates the recommended construction of berms.



The above sketch illustrates the potential natural appearance of a berm when it is designed to be varied in height along its length, as well as its cross section.

What should be avoided is the "engineered" berm illustrated below which offers no vertical relief and lacks a natural appearance.



The majority of activity nodes will be highlighted with a formal landscaping scheme. Riverview Park is a blend of both formal and informal spaces. Access points such as the PASNY Water Intake area will maintain a formal character. As the trail approaches a node, the planting scheme changes from a natural format to a scheme with geometric regularity. This transition in the landscaping will denote to the user that they are approaching a different use area (i.e., trail head, rest area). An area like the PASNY Water Intakes lends itself to a formal setting. The twin towering gate structures provide vertical elements along a linear shoreline wall. The linear aspect is accented through the development of a shade tree lined pedestrian promenade. These trees will help achieve a sense of flow along the riverwall. A wide variety of shrubs with various colors and textures will be integrated to create visual interest along the walks.

Several criteria should be used in selection of plants for a specific area and include: design function (i.e., shade, screen), hardiness (capability to survive natural climate conditions such as wind tolerance) aesthetic considerations (design, form, color). All plants herein listed will meet the basic requirements of hardiness and will be generally suitable to the site.

In order that maintenance is not hampered, slopes should be limited to 3:1. This allows for the use of mechanical mowing equipment without problem. Slopes in excess should be planted with ground cover. To be visually effective, berms should optimally be developed at a minimum height of four feet. The height of a berm should be varied in order to create a "natural" appearing element.

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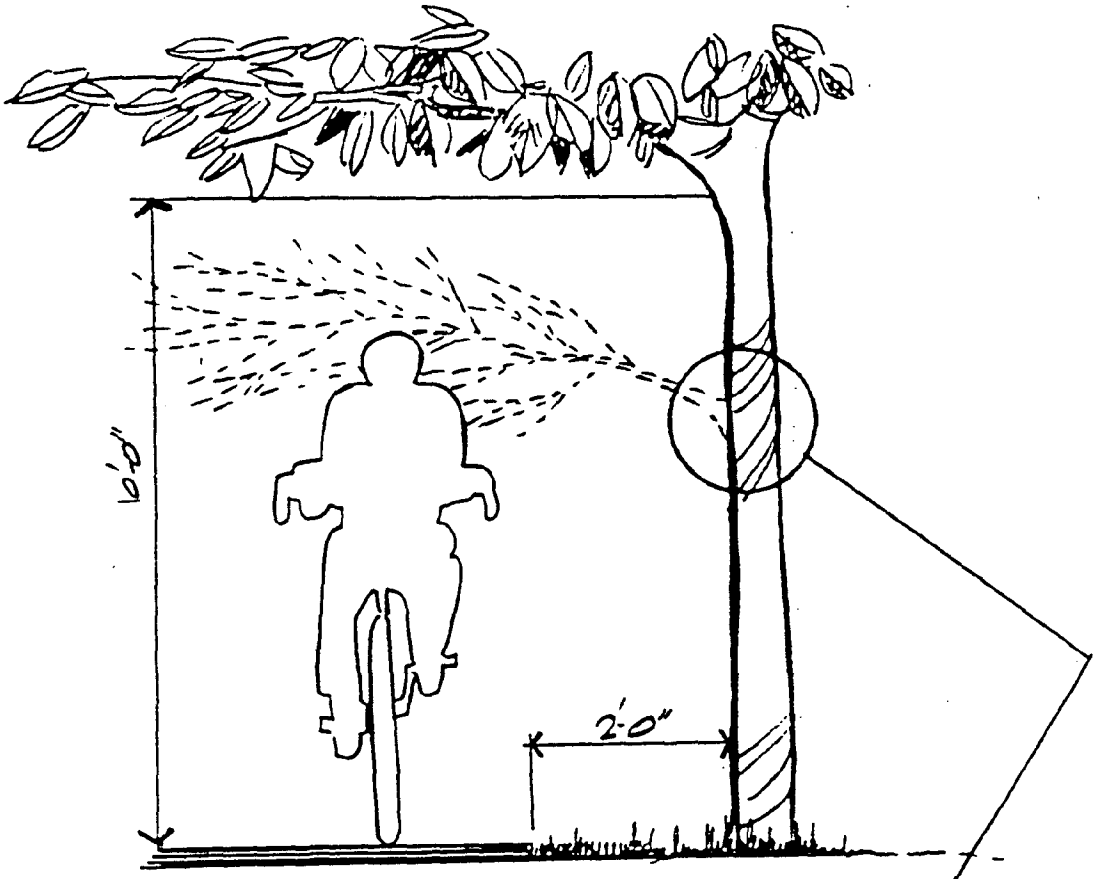
as wind tolerance) aesthetic considerations (design, form, color). All plants herein listed will meet the basic requirements of hardiness and will be generally suitable to the site.

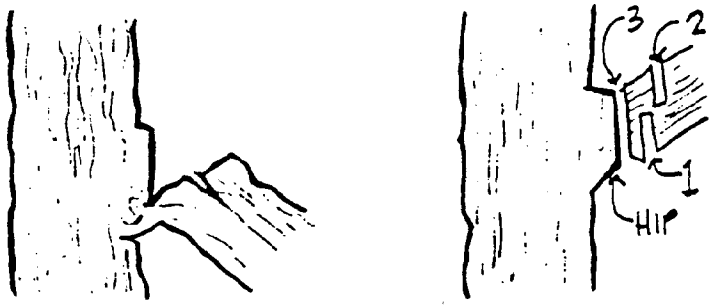
EVERGREENS

Red Pine - Pinus resinosa
European Larch - Larix decidua
White Spruce -Picea glauca
Norway Spruce - Picea abies

DECIDUOUS TREES
Serviceberry - Amelanchier latuis
Common Hackberry - Celtis occidentalis
Russian Olive - Elaeagnus angustifulia
Ginkgo - Ginkgo biloba
FLowering Crabapple - Malus "snowdrift"
Ironwood - Ostrya virginiana
Chestnut Oak - Quercus prinus
Black Locust - Robinia psodoacacoa
Sassafras - Sasafrass albidum
Littleleaf Lindon - Tilia cordata
Silver Linden - Tilia tomentosa
Weeping Willow - Salix alba

SHRUBS
Korean Forsythia - Forsythia ovata
Rugosa Rose - Rosa rugosa
Mapleleaf Viburnum - Viburnum acerifolium
Tatarian Dogwood - Cornas alba
Golden-twig dogwood - Cornus sericea "flaviramea"
Tatarian Honeysuckle - Lonicera tatarica
Arrowwood - Viburnum dentatum
European Cranberry Bush - Viburnum opulus
Bayberry - Myrica pensylvanica
Common Witch Hazel - Hamanelis verginiana
Drooping Forsythia - Forsythia suspensa





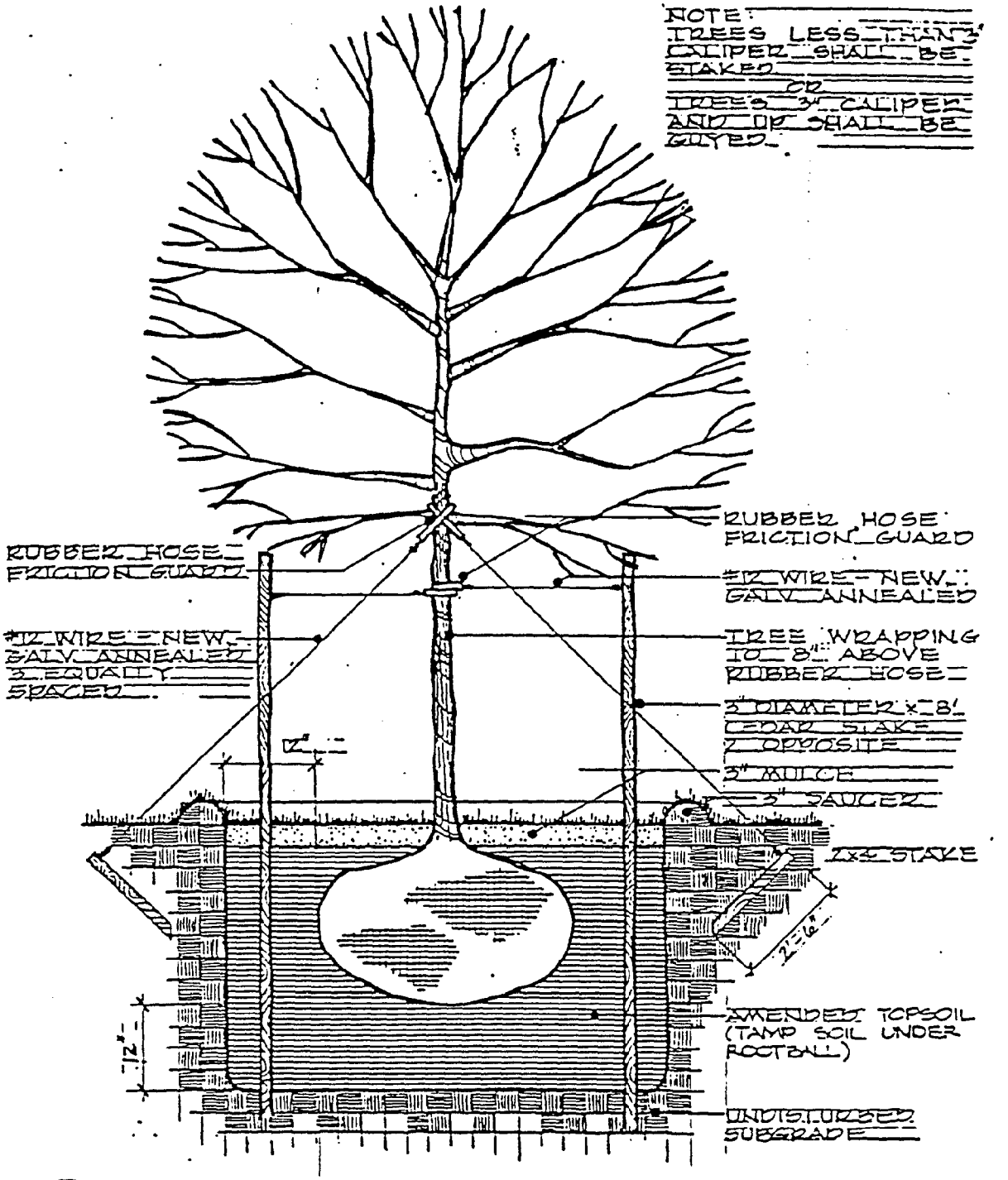
WRONG METHOD

PROPER METHOD
ORDER OF CUTS 1-3

PRUNING METHODS

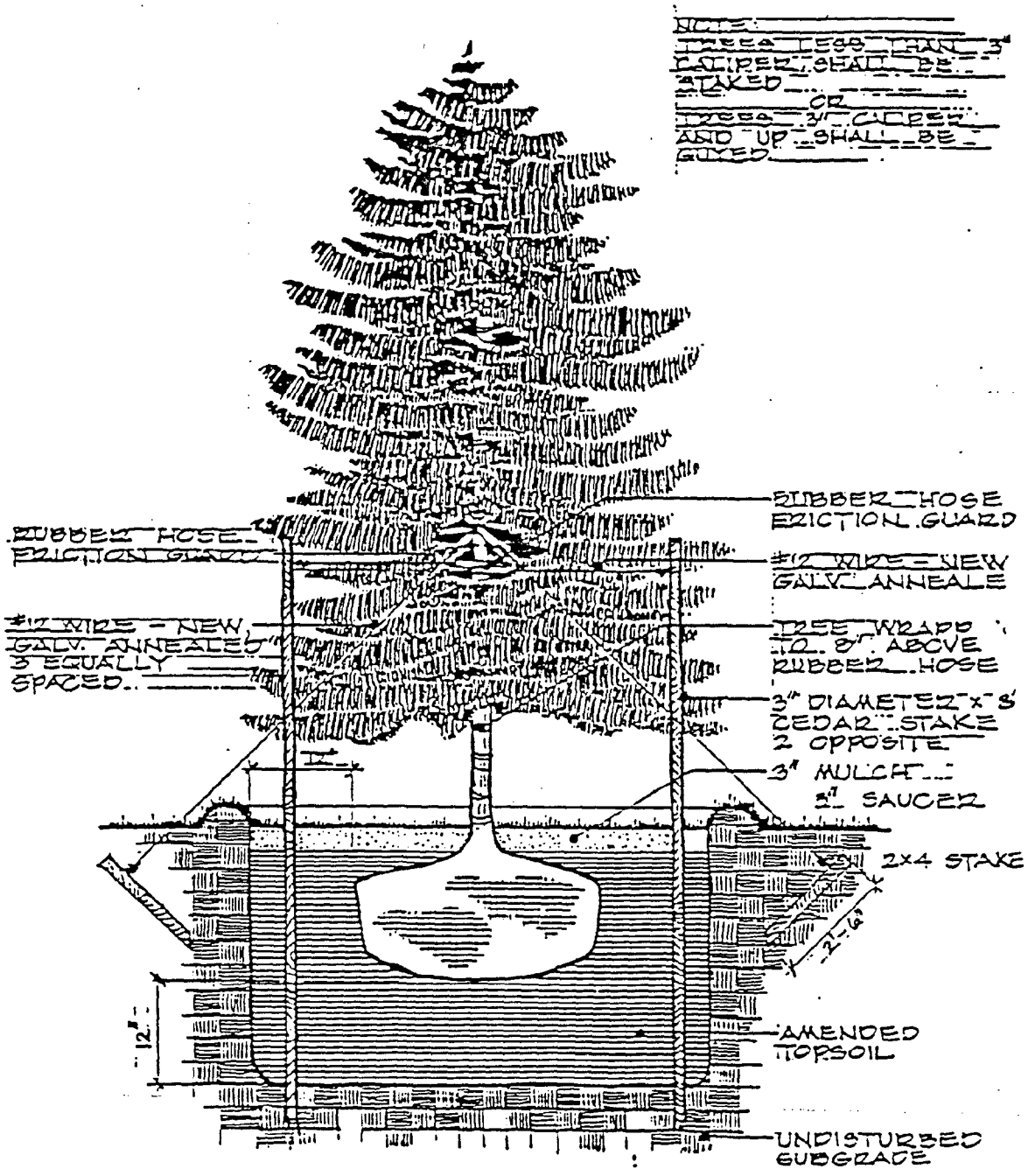
TREE PRUNING

NO SCALE



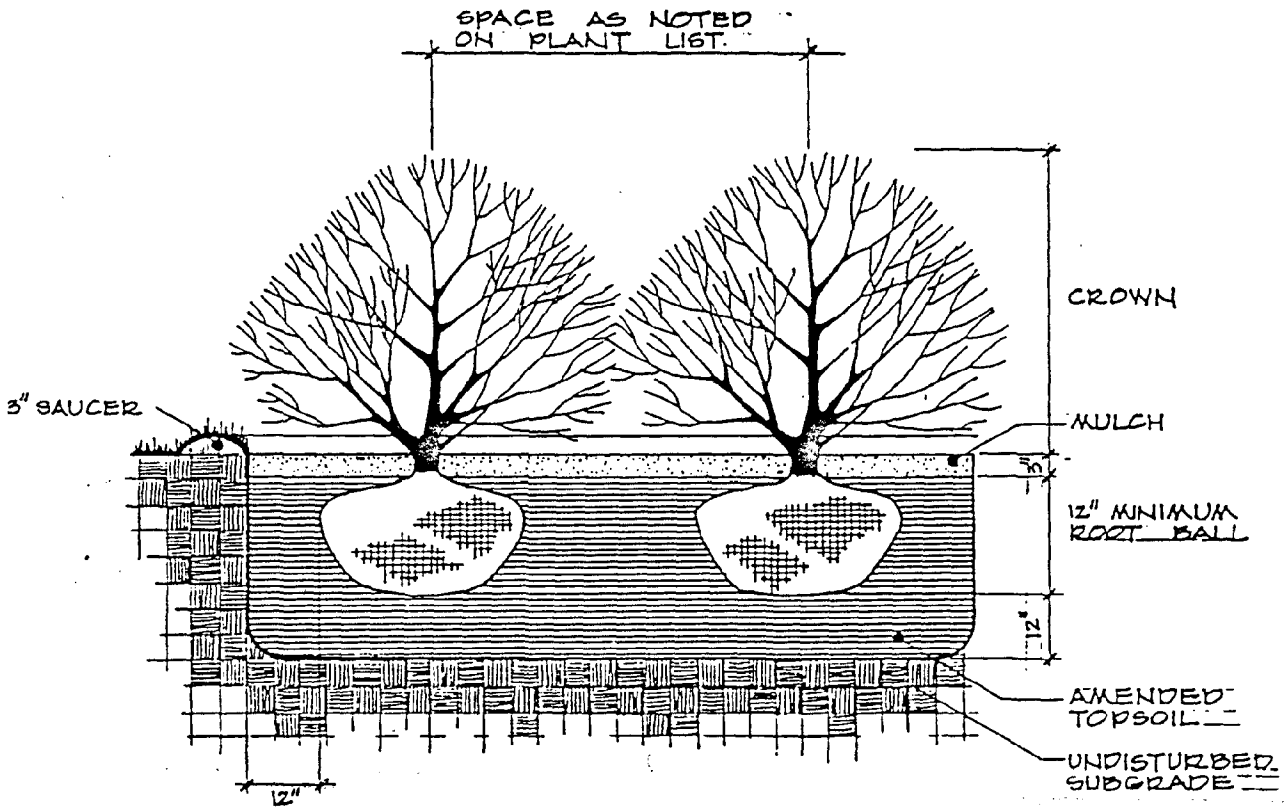
DECIDUOUS PLANTING

NO SCALE



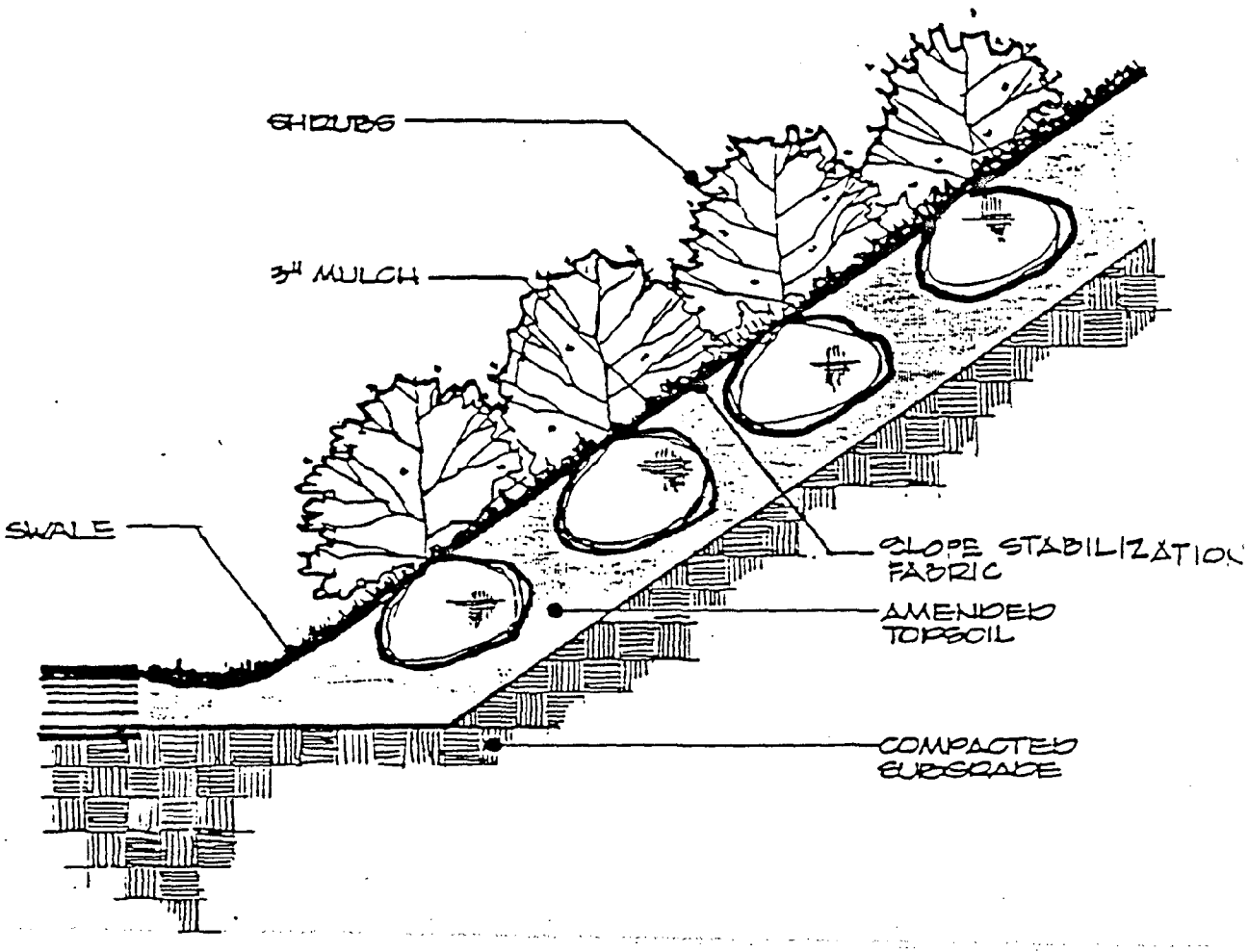
CONIFER PLANTING

NO SCALE



SHRUB PLANTING

NO SCALE



SLOPE PROTECTION

NO SCALE

PROJECT IMPLEMENTATION

PROJECT PHASING

Construction of the Pedestrian and Bicycle Trail and ancillary development can be structured to occur in two phases. Phase I includes the development of a basic but functional pedestrian/bicycle trail. It includes a six- to eight-foot wide asphalt trail, spreading of topsoil and seeding disturbed areas with grass, installation of two pedestrian bridges, and trail signage.

Phase II will include all ancillary items required for full trail and node develoments, including construciton of promenades and plaza areas, secondary pedestrian paths, picnic shelters, and extended landscape plantings.

PRELIMINARY COST ESTIMATES - PHASE I

A range of cost options are available within Phase I based on the width of trail paving and the method of crossing Gill Creek. Phase I Option A is based on 1) an 8' trail width, and 2) a separate pedestrian bridge crossing at Gill Creek. Phase I Option B is based on 1) a 6' trail width, and 2) utilizing the Robert Moses Parkway right-of-way for trail construciton in lieu of a separate pedestrian bridge. Phase I - Option A is the recommended course of action.

Phase I Construction

Option A:	
Earthwork; includes required grading for installation of trail only	$85,000
Rip rap slope installation at the Grand Island Bridge	3,200
Guardrail	6,000
Chain link screen fence	2,800
Asphalt bicycle trail, 8 ft. wide	240,000
Pedestrian bridge to cross Gill Creek	60,000
Pedestrian bridge to cross the Adams Intake	135,000
Architectural, Engineering and Surveying	70,000
Contingency - 15%	79,800
Total Cost of Phase I Construction	$681,800
Option B:	
Cost reduction factors:	
- Eliminate pedestrian bridge across Gill Creek by routing trail through the Parkway right-of-way	$60,000
- Reduce width of the asphalt bike trail from 8 ft. ($240000) to 6 ft. ($174,000) Cost saving difference = 66,000	66,000
Cost savings	126,000
Phase I Construction Option A	681,800
- Phase I cost savings measures	126,000
- Phase I Construction Option B	$555,800

Phase II Construction

Phase II construction includes the following construction: Full development of River View Park, development of access nodes and prominades, landscape installation, and benches.

Earthwork	$20,000
Stone dust pedestrian trail	3,700
Picnic structures	40,000
Landscaping; trees, shrubs, topsoil and seeding	388,000
Site amenities; lighting, benches, bollards	95,000
Children's play structure	20,000
Hard cost associated with Phase II construciton; i.e., service road required for River View Park, concrete curbing and paving required demolition and utility work	96,000
Additional signage	17,300
	$689,200
Architectural and Engineering services	$47,614
Contingencies (15%)	102,000
	$829,614

Total Project Construction

- Phase I - Option A	$681,800
- Phase II	829,614
Total	$1,511,414

IMPLEMENTATION MECHANISMS

In effect, the design Concept, development phasing and capital budgeting schedules serve as a starting point for initiating the project. The primary focus of determining what can be accomplished has been achieved. The next logical step to promote action is to identify how it can be accomplished, by whom, and in what time frame. The following discussion identifies the legal, funding, technical and political initiative that must be pursued to promote action.

Funding Mechanisms

Identify funding strategy, sources and schedule for the recommended improvements. Consider private/public match, including PASNY, NYSDOT, Century Club sponsors, NYS economic development advocates, others.

Legal Issues

Receive land owner approvals for proposed improvements. Resolve ownership, maintenance and liability issues.

Initiate legal process and regulatory review of the development proposals with the jurisdictional agencies and governments. This includes satisfying the following codes and permit requirements and regulations:

New York State Department of Environmental Conservation	- SEQR - Confirm lead agency status; determine Action Type; and initiate EIS/EAF.
New York State Department of Transportation	- Curb cut permits - Robert Moses Parkway pedestrian bridge options

City of Niagara Falls

- Dedication of rights-of-way, easements
- Site plan approvals
- Building permits
- Local Waterfront Revitalization Program review

Technical

Conduct on-site topographic survey.

Prepare detailed technical plans for project-specific construction.

Public Support

Introduce the project and solicit public support; include special interest groups, homeowners associations, community Waterfront Advisory Committees, NYS Office Parks and Recreation, NYS Department of Transportation, Power Authority of the State of New York, etc.

EXECUTIVE SUMMARY

THE SARATOGA ASSOCIATES

Executive Summary

Niagara Riverview Park and Trail

Prepared for:

The City of Niagara Falls
New York

Project Sponsor:

NYS Department of State
Division of Coastal Resources
and Waterfront Revitalization

Prepared by:

The Saratoga Associates
Landscape Architects,
Architects and Planners
Saratoga Springs, Buffalo,
New York

April 20, 1988

THE SARATOGA ASSOCIATES

NIAGARA RIVERVIEW PARK AND TRAIL

The Department of State retained The Saratoga Associates, Landscape Architects, Architects and Planners, to prepare the conceptual design for the upper Niagara River bicycle and hiking trail. The trail is a key component in the City of Niagara Falls Waterfront Revitalization program, providing unique recreational opportunities for residents and tourists in the region. In addition, because of the immediate adjacency of the Robert Moses Parkway, the trail facility and ancilary development provides the opportunity to enhance the southern "gateway" to the community.

The setting for the proposed trail is the Robert Moses Parkway corridor, defined by the Niagara River embankment and the Robert Moses Parkway. The trail begins at the North Grand Island Bridge and extends north approximately four miles to the Niagara Reservation State Park. The corridor varies in width from twenty-five to several hundred feet, and has generally flat to rolling topography. The topographic high point occurs at the PASNY spoils pile adjacent to the Adams Intake Canal. This topographic feature extends approximately thirty feet above the surrounding land forms and commands spectacular views of the river, Grand Island, Niagara Reservation and Niagara Falls. A second major element in the corridor is the PASNY water intake structures, which are visually dominant features.

The proposed Riverwalk and Bicycle Trail is designed in concept to provide the user with a diverse trail and to utilize the Niagara River as a magnificent focal point. A number of nodes or interest areas are provided along the corridor. These areas are spaced at intervals which will serve as landmarks, resting and viewing areas, and access points to the trail. The current plans include park and promenade enhancement at the PASNY water intake gates, and a proposed River View Park located at the PASNY spoils area.

The development of River View Park will provide an anchor activity node in the trail system. Components of the park will include parking, shoreline fishing access, improved dock facility for the rescue boat, active and passive play areas, area-wide promenades, and picnic facilities.

Construction of the Niagara Riverwalk and Bicycle Trail may be completed as a two step process. Phase I includes the development of a basic but functional trail. It will include a six to eight foot wide asphalt trail involving minimum grading, the spreading of topsoil and seeding of grass for all disturbed areas, the installation of two pedestrian bridges, and appropriate signage.

Phase II will include all ancillary items required for full trail development and River View Park cost factors required for this phase of construction include, but are not limited to, the

following: construction of promenades and plaza areas, pedestrian paths, picnic shelters, benches, bollards and landscape installation.

PRELIMINARY COST ESTIMATES - PHASE I AND II

Phase I Construction - Option A	
Earthwork; includes required grading for installation of trail only	$85,000
Rip rap slope installation at the Grand Island Bridge	3,200
Guardrail	6,000
Chain link screen fence	2,800
Asphalt bicycle trail, 8 ft. wide	240,000
Pedestrian bridge to cross Gill Creek	60,000
Pedestrian bridge to cross the Adams Intake	135,000
Architectural, Engineering and Surveying	70,000
Contingency - 15%	79,800
Total Cost of Phase I Construction	$681,800

Phase I Construction - Option B

Cost reduction factors:

- Eliminate pedestrian bridge across Gill Creek by routing trail through the Parkway right-of-way	$60,000
- Reduce width of the asphalt bike trail from 8 ft. ($240000) to 6 ft. ($174,000) Cost saving difference = 66,000	66,000
Cost savings	126,000
Phase I Construction Option A	681,800
- Phase I cost savings measures	126,000
- Phase I Construction Option B	$555,800

Phase II construction includes the following construction: River View Park, development of access nodes and prominades, landscape installation, benches, trail signage.

Further earthwork required	$20,000
Stone dust pedestrian trail	3,700
Picnic structures	40,000
Landscaping; trees, shrubs, topsoil and seeding	388,000
Site amenities; lighting, benches, bollards	95,000
Children's play structure	20,000
Hard cost associates with Phase II construciton; i.e., service road required for River View Park, concrete curbing and paving required demolition and utility work	96,000
Additional signage	17,300
	$689,200
Architectural and Engineering services	$47,614
Contingencies (15%)	102,000
	$829,614